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ABSTRACT

The study investigated ways of increasing reading rates by nine blind adults using the Optacon (Optical to Tactile Converter), a portable reading aid for the blind that converts the image of the printed letter into a pattern of vibrating rods. Ss' reading rates were examined when using instructional materials emphasizing linguistic structure, the cloze procedure, and simultaneous input of auditory information. Data of tape recorded oral reading samples are detailed in separate graphs for each S. Results included that there was a considerable increase in the reading rates for each S from baseline to the end of the intervention; that the overall reading errors were decreased; and that Ss with higher braille reading rates had higher oral reading rates with the Optacon. Extensive appendixes include sample reading passages and exercises. (CL)

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Final Report

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A Pilot Study and Research on Increasing Reading Rates With the Optacon

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INTRODUCTION

Background

Reading is a basic concern in children's education. Reading continues to be of primary concern for special educators. With regard to reading for children with handicaps, a number of investigations have focused on sensory processing deficits as contributing variables or causative factors resulting in reading failure (Cawley, Goldstein & Burrow, 1968; Erickson, 1979; Guralnick, 1972; Samuels, 1971). For children with visual handicaps the sensory modalities most frequently studied have been the visual, auditory and tactual (Barraga, 1973; Birch & Belmont, 1964; Hammil, 1972; Hurley, 1968; Lowenfeld, 1973; Schevil, 1971). Touch reading has been studied in terms of cutaneous sensitivity; tactual threshold; and number, spatial configuration and height of braille dots (Ashcroft, 1961; Berla, 1972; Bliss, 1962; Farrell, 1956; Foulke, 1971; Gill & Bliss, 1973; Nolan & Kederis, 1969; Zickel & Hooper, 1957).

Most studies in which the tactual mode of reading has been studied have been primarily concerned with braille. Recent technological developments have brought to the fore a new medium - tactual conterparts of printed characters. During the early 1960's, work was begun at the Stanford Research Institute, Stanford University on a device enabling the direct transmission by tactual means of printed materials to persons with visual impairments (Bliss, 1962, 1969; Bliss et al,, 1970; Linville & Bliss, 1966; Moore, 1976; Taenzer, 1970).

By 1971 a device called the Optacon (Optical-to-TActile CONverter) was made available in limited quantity to the visually impaired. Beginning with 1971, quantity production of the Optacon was begun by Telesensory Systems, Incorporated (established 1970) and a large number of blind persons began to learn how to use it.

Definition of Terms

Optacon (OPtical-to-TActile CONverter): a compact, portable, and battery-powered reading aid for the blind. It weighs slightly less than four pounds and is about the size of a portable tape recorder (2" x 6" x 8"). The Optacon consists of three component parts:

1. a miniature optoelectronic camera containing a zoom lens system adjustable for size of print and including a silicon integrated circuit. The circuit contains 144 light-sensitive photo transistors corresponding to the vibrating rods on the tactile array mounted in a housing with rollers for easy movement across the printed page. The pocket-knife sized camera is connected to the electronic unit by a small wire cable.
2. the electronics unit contains sophisticated solid state circuitry which converts light energy into mechanical energy activating the vibrating rods of the tactile array to produce a tactual image.
3. the tactile array is located in the same housing as the electronics unit. It consists of 144 tiny metal rods arranged in a 6 rods by 24 rods matrix in an

area about one half by one inch. The tips of the rods protrude through holes in a concave finger plate which allows one finger to touch the entire array. Each of the rods can vibrate independently. When all three components are in operation, they convert the image of the printed letter into a pattern of vibrating rods. The camera generates an electronic representation of an area about the size of a letter space. The electronics unit processes the representation and activates the vibration of the rods in an enlarged replica of the printed letter. (Telesensory Systems, Incorporated, Optacon owner's manual.)

Statement of the Problem

The sophisticated information storage and retrieval systems represented by printed material are unavailable to persons who are blind without intermediate transcription to braille or audio recorded form, or provision by direct human reader service. Recent advancements in braille production have, to some extent, facilitated access to these materials. However, the most direct access to all printed material has recently been made possible only through the Optacon. Braille reading, slow and cumbersome by most standards of print reading by seeing persons, provides only a fraction of the experience with written language that is available to persons who see. Therefore, simply providing persons who are blind tactual access to print symbols does not solve many problems related to reading by touch.

Among the most frequently asked questions about the Optacon

is "How fast can a person read?" (Brugler, 1978, p. 1). Unfortunately, the answer must be, "very slowly." Reading rates reported in a number of studies range from 7 to 42 words per minute (Brugler, 1978; Marmolin & Nilsson, 1973; Moore, 1975; Nelton, 1972; Tobin et al., 1973; Weisgerbler et al., 1974; Zierer, 1972). In a more recent study, Craig (1977) reported that two sighted "observers" were able to attain speeds of more than 100 words per minute after only several hours of training. Craig attributed this success to "superior tactile ability" possessed by his subjects.

In view of the reported reading rates, a significant question must be posed: What instructional strategies and materials should be employed if one is to become a proficient reader with the Optacon?

Purpose and Objectives of the Study

The purpose of this study was to investigate possibilities for increasing reading rates with the Optacon through instruction using instructional materials emphasizing linguistic structure, through the use of the cloze procedure as an instructional strategy, and through simultaneous input of auditory information (reading while listening).

The primary objectives of this pilot study were:

1. To increase reading rates and to decrease the number of reading errors through the proposed instructional strategy.
2. To develop related instructional materials for use with the Optacon.

Review of the Literature

Literature relevant to reading with the Optacon is limited in quantity and scope because of the relatively recent emergence of the Optacon. A number of investigators explored primarily the potential use of the Optacon (Bliss, 1972; Nelton, 1972; Tobin, 1973; Weisgerber, 1974). Based on these studies, Telesensory Systems, Incorporated initiated refinements which resulted in the present compact device. The potential use of the Optacon stimulated world-wide evaluation and program development activities (Bertora, 1974; Bliss & Moore, 1974; Marmolin & Nelsson, 1973; Nelton, 1972).

In 1972, the Richard King Mellon Foundation devoted resources to providing Optacons to blind individuals in the Greater Pittsburgh area (AFB, 1975) for the purpose of demonstrating the Optacon's utility on a broad scale. A survey conducted by the American Foundation for the Blind (AFB, 1975) led to the conclusion that the Optacon is indeed a valuable tool for the blind.

A number of studies were undertaken to identify factors affecting reading speed with the Optacon (Schoof, 1975; Tobin et al,, 1973; Weisgerber, 1974). These studies included consideration of age of onset of blindness, braille reading speed, sex, age at time of training, and spelling ability as the major factors. Only age at time of training, braille reading speed and spelling ability appeared to be significant factors (Schoof, 1975; Tobin et al., 1973; Weisgerber, 1974).

Moore (1975) defined reading as a process of communication between author and reader. If available information is to be

acquired, the reader must make an active contribution to this process. Research in this area indicates that information processing involved in tactual reading does not significantly differ from that of visual reading (Ashcroft, 1961). According to Foulke (1970), the visually impaired person finds it difficult to perceive more than one braille character at a time because of the limited sensory area on the index finger tip. Similarily, information from the Optacon is received through the index finger one letter at a time. This would indicate that other skills must be developed if efficient reading is to be achieved. Effective reading requires skills in structural and contextual analysis of the language (Moore, 1974). Such analysis can be facilitated by a thorough knowledge of the language structure as well as a broader "pragmatic" experience (Griffin, 1977).

Literature on teaching reading and increasing reading rates with the Optacon is practically nonexistant, Thus, a review of the broader literature on teaching reading is included. However, it is confined primarily to those studies applicable to teaching reading with the Optacon.

Recent discussion of the nature of the reading process have broadened the description of that process and focused on language (Goodman, 1967; Smith, 1971). Goodman (1967, 1970) noted that reading is a selective process involving partial use of available language clues (graphic, syntactic, and semantic) selected from perceptual input on the basis of the reader's experience. In processing information, the reader confirms, rejects, or refines tentative decisions as reading progresses and utilizes these

clues simultaneously. Goodman's position is supported by Hoskisson and Krohm (1974), Smith (1971, 1973, 1975), Burke and Goodman, Y. (1971). Hoskisson and Krohm (1974) viewed reading as three inter-related processes; reading as a sensory process which focuses on graphic information, reading as a language process which focuses on syntactic information, and reading as a perceptual process which focuses on semantic information. Wardhaugh (1969), emphasised that the process of reading is not just a matter of processing graphic signals in order to convert these signals into covert speech. The reader automatically involves both the syntactic structure and sematic information present in any text. The implication is that the reader will be more efficient if he understands and utilizes language sturcture. The language structure, i.e., the syntax, word order, the word structure, and the possible sequential combination of the graphic symbols redundantly define meaning. Thus, the better one's knowledge of that structure is, the less need for visual information (Deschant & Smith, 1977, p. 13).

Smith, Goodman and Meredith (1970), proposed two "cue systems" within the language which enable the reader more efficiently to process information extracted from the printed page. The cue system within words consists of grapheme-phoneme correspondence, word configuration, word structure and legibility factors. Within the system in the flow of language they include, the grammatical and syntactical pattern, i.e., the function of word order, inflectional suffixes, signal or function words, the context in which the words are placed and redundancy of the

language. Dechant and Smith (1977), defined redundancy as information duplicated by more than one source. The cue systems delineated by Smith, Goodman, and Meredith provide information which enables the reader to anticipate and therefore to make predictions as to the meaning of the printed message. This position strengthens an earlier one advanced by Lefevre (1962, 1964) who stressed intra- and inter-word cues, i.e., cues within the language structure and noted that the "grasp of meaning is integrally linked to grasp of structure." He attributed reading proficiency to the reader's ability to utilize language structures. Walcutt, Lamport, and McCracken (1974) emphasized Lefevre's contention that meaning comes through syntax, word form changes and the use of structure and function units within the language.

The beginning reader puts most of the emphasis on word identification (Shuy, 1977). However, word recognition alone is not sufficient for extracting meaning from the printed page. Although the "fluent reader" is a "competent word identifier," he normally does not need to identify individual words in the reading process (Smith, 1971, p. 125). In other words, the meaning of a sentence is not the sum total of the meanings of individual words within that sentence. Dechant (1977) supported this position stating that "...while word identification and reading for comprehension are distinctive processes, it is possible to read for comprehension without actually identifying all individual words" (p. 25).

Smith (1971) contended that extraction of meaning from a text is the reduction of uncertainty. This occurs when the reader

can eliminate most of the alternative meanings that a particular graphic configuration might convey. He suggested that a principal technique for reduction of uncertainty is the application of syntactic and semantic sequential redundancy. The reader "continuously predicts, samples, selects, guesses and confirms the printed message" (p. 185).

In a study of word recognition involving 50 kindergarten and 50 first grade children, Marchbanks and Levin (1965) found that specific letter positions were of vital importance. They found that the initial letter or letter cluster was "the most salient cue" in word recognition, while final and middle position came next in order respectively. These findings are supported by Williams, Blumberg, and Williams (1970) in studies concerning word recognition in beginning readers. These investigators also concluded that the initial letter is the most often used cue in word recognition.

While the above findings are very important in the process of building initial reading skills, they contribute only a small amount of information to understanding reading for comprehension. Lefevre (1964) contended that the reader must perceive entire language structures as a whole, i.e., as unitary meaning-bearing patterns. These patterns in the English language are the grammatical and syntactical word groups. Therefore, the reader must be taught to read by the language patterns which carry meaning. These patterns he identified as word structure and word order, and noted that they provide one of the most reliable clues to the total meaning-bearing pattern. A knowledge of these patterns

will enable the reader to anticipate, and to predict, meaning. Leary (1951) noted that the reader needs to think along with the author, thus becoming able to anticipate probable meaning through contextual clues. Contextual clues enable the reader to check the accuracy of words tentatively identified through the use of other clues and to gain rapid acquisition of the meaning (Emans, 1968). Among the contextual clues identified by Emans are:

1. Structural aids - such as indications of comparison and contrast.
2. Word elements - such as prefixes, roots, and suffixes.
3. Inference - such as cause-effect relationships.
4. Presentation - such as the position of words within a sentence and sequence of sentences within a paragraph (p. 13).

One of the primary signals of meaning in a language is the order in which the words appear in a sentence (Goodman, 1969). The most basic form of sentence is a "noun phrase" plus "verb phrase" (NP=V) (Lefervre & Lefevre, 1967). Knowledge of sentence patterns (word order within a sentence) facilitates the development of strategies for word anticipation thereby improving reading efficiency.

Although much work has been done on the cloze procedure of reading since it was introduced by Taylor (1953), only a small portion of it relates to instructional application for reading efficiency (Bortnick & Lopardo, 1973; Jongsma, 1971, Schell, 1972). The cloze procedure, according to Bortnick and Lopardo (1973), lends itself to instruction in the use of cues as a reading strategy most often employed by efficient readers. It is an effective way

to zero in on the use of contextual clues (both syntactic and semantic) as aids in the process of efficient reading (Dechant, 1977). While using the cloze procedure, the reader must generate words for blank spaces which meet the syntactic and semantic constraints of the sentence (Ammon, 1975).

The cloze procedure is based on deletion of every n^{th} word (usually every 5th or 9th) or every n^{th} noun or verb and requires the reader to fill in the deleted words. In the sentence, "The boy threw the _____," the sentence structure requires that only a noun or a noun phrase can be used to make it complete. The semantic structure requires that only relatively small objects can be thrown--thus the syntactic and semantic systems suggest that a relatively few nouns are possible. A variation of the cloze procedure is to delete a portion of every n^{th} word. This technique is particularly useful in teaching structural analysis of words. Deleting -er from "The teach__ was correcting the exam," forces the reader to supply the missing suffix which transforms the verbal form into a noun required by the word position and function within the sentence. Gove (1975) noted that deleting parts of words helps the reader to use graphic cues as a bridge between grammatic and semantic cues to obtain meaning. Supplying such a bridge in the first example by introducing the first letter or letter cluster of the deleted word, such as s- or st-, further restricts the available choice of nouns or noun phrases.

Heilman (1972) pointed out that at practically all points in the reading continuum, one of the abilities that sets a proficient reader from a poor one is the degree to which he/she uses the

available clues. A proficient reader keeps in mind what has been read and how the sentence he is reading builds on the intended meaning. If context clues are not sufficient the reader scans through the word in order to detect its structural components. If the particular word is still not recognized, the reader may go on past the word for additional context clues.

The exclusive use of only one or any method of word attack would necessarily make a slow reader. An efficient reader attacks a given word (within context) simultaneously on every front in which it is vulnerable to analyze. Thus, the more ability a reader has in utilizing phonic, structural, and context clues, the more likely s/he is to recognize a given word and hence to increase reading rate.

A growing number of investigators analyzing reading and reading instruction are paying particular attention to the ability of the reader to employ a "hypothesis testing" or "prediction" strategy while reading (Goodman, 1968, 1970; Hochberg, 1970; Kolers, 1970; Smith, 1971, 1973, 1975). Smith (1975) contended "that prediction is essential for reading, that everyone who can comprehend spoken language is capable of prediction, and that prediction is routinely practiced in reading by beginners as well as fluent readers" (p. 305). He advanced four reasons for prediction citing various sources (pp. 305-306):

1. Multiplicity of word meaning (Fries, 1940)
2. The multiplicity of "spelling-to-sound" rules (Venezky, 1967)
3. Limitation of the amount of information from print the human brain can process during reading (Smith and Holmes, 1971)
4. Limitation on the capacity of short-term memory (Atkinson and Shiffrin, 1970; Simon, 1974).

Examining the four reasons for prediction more closely reveals the common feature that the greater the number of alternatives the longer the time required to make a decision. Thus, if a reader is to make an "accurate" prediction "prior elimination of unlikely alternatives" is necessary. A knowledge of language structure, i.e., a knowledge of the morphemic, syntactic, and semantic aspects of the language will greatly facilitate the "elimination of unlikely alternatives." Therefore, in the present investigation,

in the development of instructional materials, emphasis was placed on the structural and functional aspects of words and sentences. The cloze procedure was employed as an instructional tool because it enables the reader to use graphic, syntactic and semantic information separately and/or simultaneously in narrowing down the possible alternatives, thus facilitating prediction. As Smith (1975) stated "...prediction will speed up reading, and therefore, help to overcome the limitations imposed by the brain's rather sluggish rate of information processing. The fewer alternatives you consider, the faster you can read and the more efficient will be the reading that you accomplish" (p. 309).

Reading While Listening

A third method of instruction selected for study in increasing reading rate with the Optacon was the simultaneous input of auditory and tactual information to the reader. The instructional materials were prerecorded at a rate of 35-40 words per minute. The prerecorded materials were presented to each subject (individually) through the use of a variable speed tape recorder and a Vary-Speech Control Module. The variable speed tape recorder allows for presenting the materials at a rate slower or faster than that of the reader while the Vary-Speech Module maintains tone quality without significant distortion. Identical materials were presented to the reader in oral form and read tactually by use of the Optacon.

Although reading while listening is not new (Neville and Pugh, 1975), the literature concerning this topic is rather scarce. Neville and Pugh (1975) reported that it was customary in Victorian schools for students to listen to the teacher's reading and then

try to imitate what they had heard. Reading aloud by the teacher and silent following of the text by the students was the usual practice until the early part of the 20th Century (p. 95). Since then, a decline in employing this method has been noticed since the emphasis has been on silent reading for comprehension (Shayer, 1972) and there has been a growing emphasis on individualized instruction.

Heckelman (1969), used "reading while listening" in a clinical situation, and found it to be quite useful in teaching reading to individual students. He termed this method "the neurological-impress method." His method required that teacher and student read aloud in unison. A language laboratory was employed by Hollingsworth (1970) to test the feasibility of the "impress-method" with group instruction. His results indicated that the use of a tape recorder in implementing "the impress-method" is not only viable but also a desirable strategy in teaching reading whether on an individual or group basis.

In 1971, the British Broadcasting Corporation developed materials consisting of tapes and printed texts for listening and reading. The aim of these materials was to provide a good quality recording of "interesting stories" (to provide motivation and sustain interest) so that students could listen while reading silently, the printed text (Doolan, Griffith, and Kerry, 1971; Doolan, 1972). Silent reading differentiated this approach from the "neurological-impress-method" of Heckelman and Hollingsworth which called for oral reading.

The reading while listening method was investigated by

Chomsky (1974) with five remedial readers. In addition to listening, Chomsky instructed her students in word- and sentence-analysis of the stories and found that method quite useful as an instructional strategy for remedial reading. Neville and Pugh (in press) used the same method to improve the silent reading of seven students whose primary language was not English. To accommodate the reading rates of the students, they slowed the rate of the recorded material. As the students progressed, they increased the rate of the text. They also reported that this method was very helpful in increasing the proficiency of these readers. Slowing the rate of the prerecorded materials, and its effect on comprehension was investigated by Neville (1974). Neville's subjects were 118 middle-school children with normal ability. One half of his subjects only listened to the tapes at three different rates, while the other half in addition to listening also read silently. He found that variation in rate had no effect on comprehension for the "listen only" group, while those who listened and read obtained higher scores where the tape rate was slower. Neville and Pugh (1975) reported that "there are also grounds for thinking that listening while reading may be an aid to fluency for readers at a certain level of attainment or stage of development" (p. 97). This statement is based on Goodman's (1968) model of the three stages of reading: the oral, the aural, and the silent stages. Neville believed that "at the aural stage, the child may benefit from having aural input provided by a tape, since this gives him experience in fluent reading by reducing the amount of mediation which he (the child)

must provide" (p. 97).

Another investigation by Neville and Pugh (1975) is of particular interest because they attempted "to improve reading by enabling the child to simultaneously hear and read a text" (p. 96). Two separate studies comprised this investigation. For the first study their subjects were drawn from a population of 71 students. Four groups, each containing six boys and six girls were formed. Based on the GAP test, they found "no statistically significant differences in respect of mean or variance for reading ages for the four groups" (p. 98).

From the four groups, they constituted two pairs of groups. One group from the first pair was "arbitrarily assigned" training at normal tape rate and its pair acted as a control. One of the remaining groups was "arbitrarily assigned" training at slowed tape rate, while its pair acted as control. For training materials, Neville and Pugh used the BBC Listening and Reading I series. Both experimental groups received training twice a week for seven consecutive weeks, while the two control groups continued their reading instruction in the classroom.

At the end of seven weeks, all 71 children were "retested with an alternative form of the GAP test" (p. 79). Based on the results of the retest and excluding the two experimental groups of the first study, two groups of 18 children each were selected to participate in the second study. The participants in this study were grouped according to reading ability. For the "normal group" reading ages ranged from 9-1 to 10-3 while for the "slowed group" the range was from 7-8 to 9-0. The chronological ages for

all participants in the second study ranged from 9-4 to 10-3. Twelve subjects from each group "were arbitrarily assigned" to experimental groups while the remaining six in each group acted as controls.

The first experimental group received training with normal tape rate, while the second experimental group received training with slowed tape rate (numbers of words per minute for both conditions was not reported). Both control groups continued their normal reading activities in the classroom. The experimental groups received training for two periods (length unspecified) per week for seven consecutive weeks. The same training materials, as in the first study, were used.

At the end of the training period all students were again administered the GAP test.

The results of the first study showed that both the slowed and the normal conditions led to large increases in reading age in some children of the two experimental groups. The investigators attributed this to the mixed reading skills of the children.

The results of the second study indicate that the "poor readers" assigned to the experimental group with slowed tape rate showed a significantly increased performance between the pre- and posttest, while those with the normal tape rate showed no significant increase as a group but a great increase in the variance of scores.

The investigators concluded that "there are indications that listening while reading, especially if the rate of the aural message is slowed to accommodate poor reading skills, may serve

to give children an enjoyable experience of reading fluency. This may give them confidence to read further for themselves, while at the same time helping them to learn to build up cumulative comprehension of a passage. It also provides practice in such skills as word recognition and identification" (p. 105).

Conclusion:

Although the studies reviewed in this section reported that reading while listening is a viable strategy in increasing reading fluency, there is still a need for more evidence on the effects of this appreach and the importance of the rate of presentation of the prerecorded materials.

RESEARCH METHOD

Subjects

The subjects for this pilot study were nine totally blind individuals from the Columbus, Ohio, metropolitan area who met specified criteria on the following variables: age, handicapping condition, formal education, previous Optacon training, and age at onset of handicapping condition. The subject selection procedure was carried out by informal interview with each subject and perusal of records.

Handicapping Condition: all subjects selected to participate in the study were totally blind and had no other handicapping condition.

Age: all subjects selected to participate in this study were 18 years of age and older.

Age at Onset of Handicap: all subjects were congenitally blind (N=6) or blinded early in life (N=3).

Formal Education: all subjects successfully completed the 12th grade.

Optacon Training: all subjects had recieved 40 or more hours of previous instruction with the Optacon and were able to recognize printed characters and manipulate the operational controls of the Optacon.

Table 1 contains a summary of subject characteristics.

Setting

The study was conducted at the facilities of the Vision Center of Central Ohio, located in Columbus, Ohio. A room was

SUBJECT CHARACTERISTICS

SUBJECT	AGE	SEX	AGE AT* ONSET OF BLINDNESS	DEGREE OF* SEVERITY	CAUSE OF* BLINDNESS	FORMAL EDU-** CATION IN YEARS	BRAILLE** READING RATE	PREVIOUS* OPTICON TRAINING IN HRS.	PRESENT** OCCUPATION
1	32	M	4 years	Total	Congenital Glaucoma	16	120	60	Computer Programmer
2	49	M	8 mos.	Total	Optic Atrophy	18	50	60	Counselor
3	27	F	18 mos.	Total	Retinal Blastoma	14	130	48	Secretary
4	25	M	birth	Total	RLF	16	100	40	Vocational Counselor
5	24	M	birth	Total	RLF	14	380	50	Computer Programmer
6	23	F	birth	Total	RLF	16	100	60	Substitute Teacher
7	27	F	birth	Total	RLF	16	130	60	Computer Programmer
8	22	M	birth	Total	Optic Atrophy	14	120	60	Computer Programmer
9	26	M	birth	Total	RLF	16	130	60	Computer Programmer

* Data obtained from subject's record

** Data obtained from subject

assigned and maintained in approximately the same arrangement throughout the study.

Equipment

Equipment used in the study included:

a) a table (3' x 5') on which the Optacon and instructional materials were placed.

b) two chairs adjustable in height to accommodate individual participants.

c) an Optacon (Model R1C) purchased from Telesensory Systems, Incorporated (TSI), Palo Alto, California used for reading printed material.

d) instructional materials developed by the investigator.

e) a General Electric audio tape recorder (Model 3-5193 equipped with variable speed controls) purchased from the American Printing House for the Blind (APH), Louisville, Kentucky, used for instructional purposes, recording, and playback of oral reading.

f) a stop watch ("Wakmann," accurate to one-fifth of a second) used for timing reading passages and determining reading rates.

Instructional Package

An instructional materials package designed for this particular study was developed. The package consists of three sections of instructional materials:

1. Instructional materials based on the linguistic structure of the language (DeStefano, 1978; Lefevre & Lefevre,

1967; Moore, 1975). This section includes morphological and syntactic structures presented to the subjects in brailled and in printed form.

2. Instructional materials based on the cloze procedure of reading (Bortnick & Lopardo, 1973; Moore, 1975; Taylor, 1953). This section includes reading passages of various lengths with certain morphological units omitted. The passages were presented to the subjects in print to be read with the Optacon. The subjects were required, using graphic, syntactic, and semantic clues, orally to fill in the omitted units.
3. Instructional materials in print and recorded forms. This section included reading passages of various length pre-recorded on cassette tapes and provided in printed forms. The subjects were presented simultaneously with both forms. The recorded passages were presented at a rate slightly faster than the subjects' oral reading rates through the use of the variable speed tape recorder (see equipment section, part e).

Baseline reading passages were approximately 200 words in length and at three levels of reading difficulty. The levels of difficulty were based on the Dale-Chall readability formula (Dale-Chall, 1948). These materials were presented to the subjects only in printed form and were read orally with the Optacon.

Data Recording Procedure

Selected passages, with a predetermined length, were read aloud by each subject and recorded on an audio tape to be played

back later for analysis and evaluation. Audio taping eliminates a stressful situation of timed reading and resulted in a more accurate measurement of reading rates and reading errors.

Following each session the investigator[1] played back the audio tape and recorded the number of reading errors and the length of time in minutes (accurate to the nearest second) it took the subject to read each passage. The reading rate then was computed based on the following formula:

$$\text{Reading Rate} = \frac{\text{Total number of words read}}{\text{Total number of minutes and seconds (converted to decimal equivalents)}}$$

The reading rates (words per minute) and number of reading errors were recorded on a daily log for each subject.

In order to establish the reliability of the recording procedures, a second observer independently evaluated randomly selected audio tapes. An inter-observer agreement was computed based on the following formula:

$$\text{Percent of agreement} = \frac{\text{Number of agreements}}{\text{Number of agreements and disagreements}} \times 100$$

The criterion for acceptable agreement between investigator and observer was set at 100%. Whenever agreement was not reached, the protocol was re-evaluated until agreement was attained.

Research Design and Training Procedure

To analyze the effects of intervention strategies, a within subject multiple baseline design (Cooper, 1974) was employed.

[1] "Investigator" refers to Project Director

The independent variable was the sequential presentation of instructional materials, while the dependent variables were reading rates (words per minute) and number of errors. Hand-tracking as opposed to automatic tracking was used.

The study was comprised of four phases: baseline, phase one, phase two, and phase three. Participants received one hour of instruction and one hour of practice for each week of intervention. Phase one consisted of ten weeks and phase two and three consisted of seven weeks each. Thus participants had a total of 24 hours of instruction and 24 hours of practice over the course of the study.

The Training Procedure

Rationale

The main objective of this study was to increase reading rates with the Optacon. To achieve this objective instructional materials were developed and a strategy of instruction using these materials was designed. It was decided that the instructional materials should be presented sequentially beginning with materials promoting an awareness of language structure; moving through materials promoting language prediction ability; and finally materials for listening-while-reading, i.e., auditory pacing. The sequential presentation of the instructional materials necessitated three instructional stages.

For the purpose of this study, reading was defined not as decoding individual graphic symbols, i.e., letters, or words, but as a means of obtaining information from the printed page. Thus, throughout the study data were gathered only from reading short passages.

A visual reader gains information from the printed page by "chunking," a printed line and interpreting the graphic symbols simultaneously into meaning-bearing units (Lefevre, 1964). The Optacon reader, on the other hand, limited by the tactual mode and a letter by letter presentation of the material, processes much smaller bits of information and obtains or builds meaning as the camera moves across the printed line. This would indicate that the Optacon reader needs to build skills which will enable him to anticipate and, hence, to predict what will appear next on the tactile array. Thus, it was hypothesized that the Optacon reader could increase reading rate by acquiring these skills related to the structural patterns of the language and their significance to the reading process.

The significance of understanding the structure of the language is that a myriad of cues, inherent in the language, are available to the Optacon reader beyond the tactual information being presented. It has been estimated that the English language is 75% redundant (Shannon, 1951). This redundancy in the language enables the reader to "sample and predict" the printed materials at a quicker pace, thereby increasing his/her reading efficiency.

The multiple baseline design was applied across subjects during each condition. All subjects entered baseline condition at the same time. After three sessions, subjects one, two and three entered intervention while the remaining six subjects remained at baseline condition. Subjects four, five, and six entered intervention when the first group of subjects showed an increase in reading rate while the remaining three subjects remained at base-

line condition. This procedure continued until baseline data were collected for all three groups of subjects. Data were collected in order to assess the current level of performance (reading rate in words per minute and number of reading errors made per session). Each subject was presented with reading passages of approximately 200 words in length. Using the Dale-Chall readability formula (Dale-Chall, 1948), one set of passages was rated as easy, a second set as standard, and a third set as fairly difficult.

The subjects were asked to read orally with the Optacon an equal number of passages from each set. The oral reading was tape recorded and evaluated by the investigator and independently by a second observer following each session.

Phase one (10 weeks)

Each subject met individually with the investigator for two sessions per week.

The subjects were presented with materials specifically designed to emphasize the predictability of the language through its morphological and syntactical structure. All materials were presented, both in braille and in print. Emphasis was placed on the function of the structural units, rather than their grammaticalness. Each subject, after receiving instruction with the braille copy was required to practice reading with the Optacon a printed copy designed to provide application of the braille instructional material. This strategy was applied throughout this stage. The subject was first introduced to the function of the word classes within a sentence. The instruction proceeded in an identical

pattern for word markers, inflectional and derivational suffixes, prefixes, roots, connectives, phrase and sentence patterns.

For data gathering purposes, once a week each subject read orally, a short passage which was recorded on audio-tape for evaluation.

Phase Two (7 weeks)

While the first phase emphasized the predictability of the language based on its morphological and syntactical structure, the second phase of the study stressed its contextual predictability. This was achieved through the cloze procedure. The cloze procedure is essentially a technique for manipulating the reader's total perception of the material being read (Greathouse and Neal, 1976). This manipulation was accomplished by selective deletion of certain words and/or parts of words, within a given text, which the subject was required to recreate on the basis of the context.

When used as a reading assessment tool the cloze procedure results in word replacement scores which reflect the reader's ability to use context clues. When used as an instructional technique, the reader's practice in using words predicted by the context builds skills in using those same aspects of context for comprehension when reading (Greathouse and Neal, 1976).

The subjects were introduced to the cloze procedure as follows:

1. Key words were presented first in isolation.
2. These words were incorporated in a sentence.
3. Suffixes were deleted from these words.
4. The entire word was deleted from the sentence.

Following this introduction, the subjects were presented with short

cloze passages of 100 to 150 words which they were asked to read orally and to summarize briefly (9th word deleted) and for two sessions to read silently and summarize (5th word deleted). These passages were constructed using three types of deletions:

1. Deletion of portions of every n^{th} word (usually 5th or 9th word)
2. Deletion of every n^{th} noun or verb (usually 5th or 9th)
3. Deletion of every n^{th} word (usually every 5th or 9th) regardless of its grammatical class.

The type of deletion used determined what aspect of the instructional procedure was used. When a student was working with items in which portions of words were deleted, the primary object was not to fill in the missing portions, but rather, by using syntactic and semantic clues in conjunction with the graphic information, to determine the entire word within the context of the meaning. The discussions that followed such exercise emphasized using graphic along with syntactic and semantic cues as a bridge to obtaining meaning without the necessity to scan every graphic element of a given word.

For example, a passage may include the sentence "The teacher taught geography and hist____." The provided graphic information "hist____" coupled with the syntactic information, that a noun must complete the sentence, and the semantic information that the teacher teaches a certain academic subject enables the reader easily and quickly to complete the sentence by responding "history."

When every n^{th} noun or verb was deleted, the discussion focused on factual or semantic information. If a noun required to complete

a thought was replaced by another noun, how did such substitution affect the meaning of the sentence; or if a verb was replaced by a noun, How did it affect syntactic structure as well as the semantic information of the sentence?

When the third type of deletion was used, i.e., deleting every n^{th} word from a passage, the discussion centered on the use of syntactic and semantic cues. Since this type could delete any word within a passage the reader was expected to deduce the appropriate word from the rest of the passage. For example in the sentence, "She walked _____ the forest to reach the hospital," syntactic or semantic information calls for "through" or "around the forest," however, only through the rest of the passage can one determine the exact word needed to fill in the blank. The student then is encouraged to follow how the meaning of an entire passage builds on the meaning of separate sentences.

Thus, the emphasis in the second phase was on the effective use of graphic, syntactic and semantic clues which provided the reader with greater power of prediction than was possible only through the instruction given during the first phase of the study.

Phase Three (7 weeks)

During this phase (7 weeks), subjects were introduced to the variable speed tape recorder (Model 3-5193) and used it in building reading speed.

The intention of this training period was to provide the subjects with concurrent tactual and aural input. The subjects were presented with printed texts, of various length, to be read with the Optacon. The same texts were prerecorded on cassette

tapes and presented aurally through earphones.

Since subjects' hands were used in reading with the Optacon, a foot pedal facilitated the operation of the tape recorder.

At the beginning of each session, the investigator set the speed of the recorded material at a rate slightly higher than the subject's reading rate. Each subject then was instructed to "try and catch up" with the speed of the recorded material. The intention of this instruction was to make the subjects increase their reading rate by attempting to "catch up" with the aural input.

The purpose of this instructional stage was to provide the subjects with aural as well as tactile input of the same material.

For this phase, all materials were selected from the book (Gray, E. Friend within the gates, 1960) to provide continuity and the building of meaning within a story.

The selections were prerecorded by the Bell Telephone Volunteers from Columbus, Ohio on audiotapes at a rate of 35-40 words per minute. The same selections were typed to be read with the Optacon.

The procedure employed here differs from the "Listen and read method" employed by Doolan (1972), Heckelman (1969), Neville (1974), Neville and Pugh (1975) in that the prerecorded materials were presented at a rate two to three words faster than the reading rate of the subjects. Both the printed and the prerecorded materials were presented simultaneously. The readers were expected to continuously keep up with the recorded materials while reading the printed text with the Optacon. The pacing procedure allows the reader to gain confidence in his/her newly acquired skills in the

use of graphic, syntactic and semantic clues available from the language. It was also hoped, and later confirmed, that through continuous pacing the subject's reading rate would increase.

Results

The main objectives of this pilot study were to increase the reading rates and to decrease the oral reading errors of readers with the Optacon. Instructional materials were developed and used to achieve these objectives.

The study was conducted in three phases with separate instructional materials developed or selected for each phase. These materials were presented to the subjects in sequential order beginning with an awareness of the language structure, language predictability and auditory pacing. This sequential presentation enabled the subjects to develop a clearer understanding of the nature of the reading process and how to apply this understanding to reading with the Optacon as the training progressed.

The study was carried out as a pilot study in discrete phases maintaining concern for the overall impact of three instructional strategies and the related instructional materials. A multiple baseline, single subject research design was selected to provide the most appropriate and powerful experimental design for the study. Experimental control was provided through changes in instructional strategies and instructional materials expected to result in changes in reading rates and errors. Data were collected once every week for each subject (See Appendix II for data collection forms). Oral reading of the predetermined passages was recorded on audio tape. The oral reading samples were later analyzed and evaluated to determine reading rates and errors. These data were then recorded on a daily log for each subject (tables 2-10), and transferred to graphic representations

Table 2

DAILY LOG

Subject # 1*

CONDITION	PASSAGE #	# OF WORDS	TIME IN MINUTES (1)	WORDS PER MINUTE (2)	# OF ERRORS	ERRORS PER MINUTE
baseline	1	180	8.37	21.51	9	1.07
	2	168	7.63	22.02	8	1.04
	3	133	6.23	21.35	6	.96
Intervention I	1	97	4.27	22.72	7	1.63
	2	71	3.02	23.51	6	1.98
	3	124	4.65	26.67	8	1.72
	4	120	4.28	28.04	5	1.16
	5	121	4.48	27.01	7	1.56
	6	103	2.95	34.92	6	2.03
	7	108	2.85	37.89	4	1.40
	8	95	2.45	39.26	2	.81
	9	77	1.80	43.78	1	.55
	10	128	3.13	40.89	4	1.27
Intervention II	11	74	1.58	46.84	5	3.16
	12	82	1.72	47.67	3	1.74
	13	94	2.00	47.00	2	1.00
	14	96	2.00	48.00	0	0.00
	15	147	2.85	51.58	4	1.40
	16	80	1.62	49.38	2	1.23
	17	66	1.32	50.00	1	.75
Intervention III						

*Subject discontinued training due to additional duties required of him at his employment.

*(1) Time in minutes and seconds converted to minutes and hundreds of minutes by means of the following formula:

$$\frac{\text{Minutes} \times 60(\text{seconds}) + \text{seconds}}{60(\text{seconds})} = \text{Minutes}$$

(2) Reading rates calculated by the following formula:

$$\frac{\text{Number of words read}}{\text{Time in minutes}} = \text{Words per minute}$$

Table 3

DAILY LOG

Subject # 2

CONDITION	PASSAGE #	# OF WORDS	TIME IN MINUTES	WORDS PER MINUTE	# OF ERRORS	ERRORS PER MINUTE
Baseline	1	180	61.22	2.94	23	.37
	2	168	56.00	3.00	22	.39
	3	133	46.33	2.87	21	.45
Intervention I	1	97	28.12	3.45	21	.74
	2	71	14.92	4.76	19	1.27
	3	124	17.65	7.03	22	1.25
	4	120	20.00	6.00	20	1.00
	5	121	14.85	8.15	18	1.21
	6	103	9.80	10.51	14	1.42
	7	108	9.53	11.33	14	1.46
	8	95	6.25	15.20	9	1.44
	9	77	4.80	16.04	5	1.04
	10	128	8.08	15.84	7	.86
Intervention II	11	74	4.53	16.34	10	2.20
	12	82	4.53	18.10	11	2.42
	13	94	4.60	20.43	9	1.95
	14	96	4.05	23.70	9	2.22
	15	147	6.66	22.07	11	1.65
	16	80	3.38	23.67	6	1.77
	17	66	2.75	24.00	4	1.45
Intervention III	18	127	4.88	26.02	9	1.84
	19	82	2.92	28.08	6	2.05
	20	74	2.50	29.60	5	2.00
	21	131	4.67	28.05	8	1.71
	22	99	3.15	31.43	5	1.58
	23	125	4.17	29.98	7	1.67
	24	92	2.98	30.87	6	2.01

Table 4

DAILY LOG

Subject # 3

CONDITION	PASSAGE #	# OF WORDS	TIME IN MINUTES	WORDS PER MINUTE	# OF ERRORS	ERRORS PER MINUTE
Baseline	1	180	9.28	19.40	7	.75
	2	168	9.50	17.68	8	.84
	3	133	7.37	18.05	6	.81
Intervention I	1	97	4.85	20.00	7	1.44
	2	71	3.13	22.68	7	2.23
	3	124	5.02	24.70	8	1.59
	4	120	3.92	30.61	6	1.53
	5	121	4.55	26.59	5	1.09
	6	103	3.12	33.01	4	1.28
	7	108	2.98	36.24	4	1.34
	8	95	7.27	41.85	2	.27
	9	77	1.88	40.95	1	.53
	10	128	3.05	41.98	4	1.31
Intervention II	11	74	1.75	42.29	5	2.85
	12	82	1.90	43.16	5	2.63
	13	94	2.02	46.53	4	1.98
	14	96	2.13	45.07	3	1.40
	15	147	3.07	47.88	6	1.95
	16	80	1.70	47.05	5	2.94
	17	66	1.32	50.00	2	1.51
Intervention III	18	127	2.45	51.83	6	2.44
	19	82	1.45	56.85	5	3.44
	20	74	1.35	54.81	3	2.22
	21	131	2.27	57.51	7	3.08
	22	99	1.62	61.11	4	2.46
	23	125	2.08	60.09	6	2.88
	24	92	1.52	60.53	5	3.28

Table 5

DAILY LOG

Subject # 4

CONDITION	PASSAGE #	# OF WORDS	TIME IN MINUTES	WORDS PER MINUTE	# OF ERRORS	ERRORS PER MINUTE
Baseline	1	180	14.90	12.08	16	1.07
	2	168	15.27	11.00	14	.91
	3	133	12.90	10.31	11	.85
	4	163	13.58	12.00	13	.95
	5	207	15.15	13.66	14	.92
	6	194	16.47	11.78	14	.85
Intervention I	1	97	8.05	12.05	14	1.73
	2	71	5.47	12.98	12	2.19
	3	124	10.33	12.00	15	1.45
	4	120	8.15	14.72	11	1.34
	5	121	7.32	16.53	9	1.22
	6	103	5.95	17.31	6	1.00
	7	108	6.75	16.00	7	1.03
	8	95	4.95	19.19	4	.80
	9	77	3.77	20.42	3	.79
	10	128	5.70	22.46	4	.70
Intervention II	11	74	3.62	20.44	7	1.93
	12	82	3.52	23.30	6	1.70
	13	94	3.75	25.07	4	1.06
	14	96	3.47	27.67	6	1.72
	15	147	5.08	28.94	7	1.37
	16	80	2.93	27.30	3	1.02
	17	66	2.28	28.95	3	1.31
Intervention III	18	127	4.10	30.98	6	1.46
	19	82	2.57	31.91	4	1.55
	20	74	2.25	32.89	3	1.33
	21	131	3.62	36.19	5	1.38
	22	99	2.78	35.61	4	1.43
	23	125	3.47	36.02	5	1.44
	24	92	2.55	36.08	3	1.17

Table 6

DAILY LOG

Subject # 5

CONDITION	PASSAGE #	# OF WORDS	TIME IN MINUTES	WORDS PER MINUTE	# OF ERRORS	ERRORS PER MINUTE
Baseline	1	180	13.85	13.00	12	.86
	2	168	11.38	14.76	10	.87
	3	133	8.78	15.15	11	1.25
	4	163	10.90	14.95	10	.91
	5	207	13.80	15.00	12	.86
	6	194	13.32	14.56	10	.75
Intervention I	1	97	6.07	15.98	11	1.81
	2	71	4.10	17.32	10	2.43
	3	124	6.13	20.23	10	1.63
	4	120	4.97	24.14	8	1.60
	5	121	5.22	23.18	7	1.34
	6	103	3.92	26.28	6	1.53
	7	108	3.62	29.83	5	1.38
	8	95	2.65	35.05	2	.75
	9	77	2.27	35.92	1	.44
	10	128	3.57	35.85	5	1.40
Intervention II	11	74	2.25	32.89	8	3.55
	12	82	2.47	33.20	8	3.23
	13	94	2.63	35.74	6	2.28
	14	96	2.53	37.94	7	2.76
	15	147	3.97	37.02	6	1.51
	16	80	2.05	39.02	5	2.43
	17	66	1.57	42.04	4	2.54
Intervention III	18	127	2.97	42.76	7	2.35
	19	82	1.87	43.85	6	3.20
	20	74	1.63	45.40	5	3.06
	21	131	2.92	44.86	7	2.39
	22	99	2.07	47.83	6	2.89
	23	125	2.67	46.82	7	2.62
	24	92	1.90	48.42	5	2.63

Table 7

DAILY LOG

Subject # 6

CONDITION	PASSAGE #	# OF WORDS	TIME IN MINUTES	WORDS PER MINUTE	# OF ERRORS	ERRORS PER MINUTE
Baseline	1	180	31.52	5.71	17	.53
	2	168	25.20	6.67	16	.63
	3	133	30.80	4.32	15	.48
	4	163	32.02	5.09	16	.49
	5	207	41.40	5.00	17	.41
	6	194	28.83	6.73	16	.55
Intervention I	1	97	15.57	6.23	13	.83
	2	71	10.08	7.04	11	1.09
	3	124	15.80	7.85	14	.88
	4	120	12.87	9.32	13	1.01
	5	121	11.32	10.69	11	.97
	6	103	8.27	12.45	9	1.08
	7	108	8.23	13.12	9	1.09
	8	95	6.40	14.84	5	.78
	9	77	5.67	13.58	3	.52
	10	128	9.82	13.03	4	.40
Intervention II	11	74	5.32	13.91	9	1.69
	12	82	5.47	14.99	7	1.27
	13	94	5.53	17.00	7	1.26
	14	96	5.37	17.88	8	1.48
	15	147	7.45	19.73	9	1.20
	16	80	3.98	20.10	7	1.75
	17	66	3.13	21.09	4	1.27
Intervention III	18	127	6.63	19.16	8	1.20
	19	82	3.90	21.03	7	1.79
	20	74	3.58	20.67	5	1.39
	21	131	5.93	22.09	7	1.18
	22	99	4.10	24.15	5	1.21
	23	125	5.25	23.81	6	1.14
	24	92	4.02	22.89	5	1.24

Table 8

DAILY LOG

Subject # 7

CONDITION	PASSAGE #	# OF WORDS	TIME IN MINUTES	WORDS PER MINUTE	# OF ERRORS	ERRORS PER MINUTE
Baseline	1	180	11.37	15.83	10	.87
	2	168	10.27	16.36	10	.97
	3	133	7.18	18.52	9	1.25
	4	163	9.20	17.72	11	1.19
	5	207	10.72	19.31	12	1.11
	6	194	9.38	20.68	11	1.17
	7	160	8.02	19.95	10	1.24
	8	143	9.62	18.77	8	.83
	9	134	7.18	18.66	8	1.11
Intervention I	1	97	4.28	22.66	11	2.57
	2	71	3.00	23.66	9	3.00
	3	124	4.93	25.15	12	2.43
	4	120	4.32	27.77	11	2.54
	5	121	3.83	31.59	10	2.61
	6	103	3.12	33.01	8	2.56
	7	108	3.00	36.00	7	2.33
	8	95	2.63	36.12	4	1.52
	9	77	2.03	37.93	3	1.47
	10	128	3.40	37.65	6	1.76
Intervention II	11	74	1.95	37.95	7	3.58
	12	82	2.13	38.50	8	3.75
	13	94	2.40	39.17	6	2.50
	14	96	2.30	41.74	6	2.60
	15	147	3.47	42.36	8	2.30
	16	80	1.90	42.11	4	2.10
	17	66	1.57	42.04	3	1.91
Intervention III	18	127	3.02	42.05	7	2.31
	19	82	1.87	43.85	6	3.20
	20	74	1.62	45.68	5	3.08
	21	131	2.70	48.51	6	2.22
	22	99	1.98	50.00	4	2.02
	23	125	2.52	49.60	5	1.98
	24	92	1.82	50.55	3	1.64

Table 9

DAILY LOG

Subject # 8

CONDITION	PASSAGE #	# OF WORDS	TIME IN MINUTES	WORDS PER MINUTE	# OF ERRORS	ERRORS PER MINUTE
Baseline	1	180	9.35	19.25	15	1.60
	2	168	8.57	19.60	15	1.75
	3	133	7.05	18.87	11	1.56
	4	163	8.00	20.38	13	1.62
	5	207	9.82	21.08	14	1.42
	6	194	9.97	19.46	12	1.20
	7	160	7.50	21.33	12	1.60
	8	143	6.27	22.81	11	1.75
	9	134	6.08	22.04	11	1.80
Intervention I	1	97	4.48	21.65	13	2.90
	2	71	2.97	23.91	12	4.04
	3	124	4.48	27.69	15	3.34
	4	120	4.48	26.78	11	2.45
	5	121	4.18	28.95	10	2.39
	6	103	3.32	31.02	8	2.40
	7	108	3.65	29.59	6	1.64
	8	95	2.88	32.99	5	1.73
	9	77	2.28	33.77	4	1.75
	10	128	3.95	32.41	6	1.51
Intervention II	11	74	2.18	33.94	8	3.66
	12	82	2.38	34.45	8	3.36
	13	94	2.60	36.15	6	2.30
	14	96	2.55	37.65	7	2.74
	15	147	4.15	35.42	8	1.92
	16	80	2.05	39.02	5	2.43
	17	66	1.62	40.74	4	2.46
Intervention III	18	127	3.07	41.37	7	2.28
	19	82	1.85	44.32	6	3.24
	20	74	1.67	44.31	6	3.59
	21	131	2.90	45.17	7	2.41
	22	99	2.13	46.49	5	2.34
	23	125	2.57	48.64	6	2.33
	24	92	2.00	46.00	4	2.00

Table 10

DAILY LOG

Subject # 9

CONDITION	PASSAGE #	# OF WORDS	TIME IN MINUTES	WORDS PER MINUTE	# OF ERRORS	ERRORS PER MINUTE
Baseline	1	180	8.02	22.44	9	1.12
	2	168	7.47	22.49	7	.93
	3	133	6.10	21.80	6	.98
	4	163	7.22	22.58	8	1.10
	5	207	8.87	23.33	10	1.12
	6	194	8.20	23.66	7	.85
	7	160	6.57	24.35	6	.91
	8	143	5.72	25.00	7	1.22
	9	134	5.20	25.77	6	1.15
	1	97	3.78	25.66	9	2.38
	2	71	2.72	26.10	8	2.94
	3	124	4.55	27.25	10	2.19
	4	120	4.13	29.06	9	2.17
	5	121	4.20	28.81	7	1.66
	6	103	3.35	30.93	5	1.49
	7	108	3.57	30.25	4	1.12
	8	95	2.97	31.99	3	1.01
	9	77	2.33	33.05	2	.85
	10	128	3.55	36.06	5	1.40
	11	74	1.98	37.37	7	3.53
	12	83	2.00	41.50	8	4.00
	13	94	2.15	43.72	9	4.18
	14	96	2.08	46.15	7	3.36
	15	147	3.20	45.94	10	3.12
	16	80	1.73	46.24	4	2.31
	17	66	1.40	47.14	2	1.42
	18	127	2.73	46.52	7	2.56
	19	82	1.68	48.81	5	2.97
	20	74	1.47	50.34	3	2.04
	21	131	2.63	49.81	5	1.90
	22	99	1.88	52.66	3	1.59
	23	125	2.30	54.35	4	1.73
	24	92	1.72	53.40	3	1.74

(Figures 1-6). Such graphic representation allows one to quickly and with ease inspect the results of the study.

To assure the accuracy of the data, a second observer reviewed the recorded readings and independently evaluated the reading rates and oral reading errors. Reliability measures were computed for: (a) oral reading rates, and (b) oral reading errors. Percentage of agreement was calculated by totalling the numbers of agreements and disagreements in each category and inserting the sums in the following formula:

$$\frac{\text{Agreements}}{\text{Agreement + Disagreements}} \times 100 = \text{Percentage of agreement}$$

A criterion level of 100% was required as the acceptable criterion for reliability checks. When discrepancies occurred they were reexamined until agreement was reached. Thus, the criterion was met for each category.

Presentation of Data

Data were collected on individual subjects throughout the baseline and intervention conditions. Data collected were on oral reading rate in words per minute read and oral reading errors.

Baseline Condition:

Data for baseline condition for each subject are presented in Table 11, and represented graphically in Figures 1-6. An inspection of the data reveals that:

For subject #1, the baseline reading rate range was from 21.35 to 22.02 words per minute while the oral reading errors ranged from 6 to 9.

For subject #2, the baseline reading rate ranged from 2.87

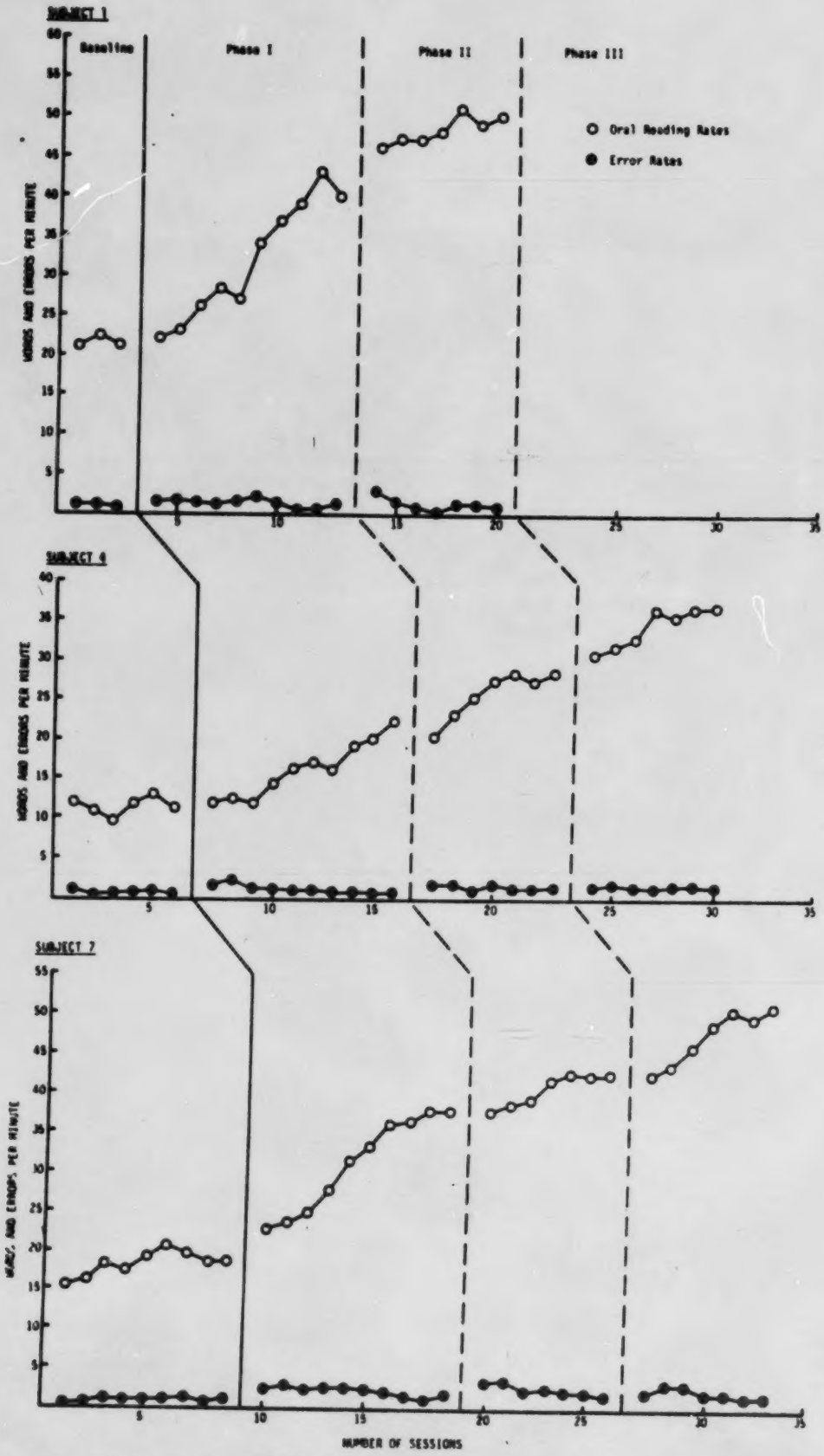

Figure 1. Oral reading and error rates for Group 1.

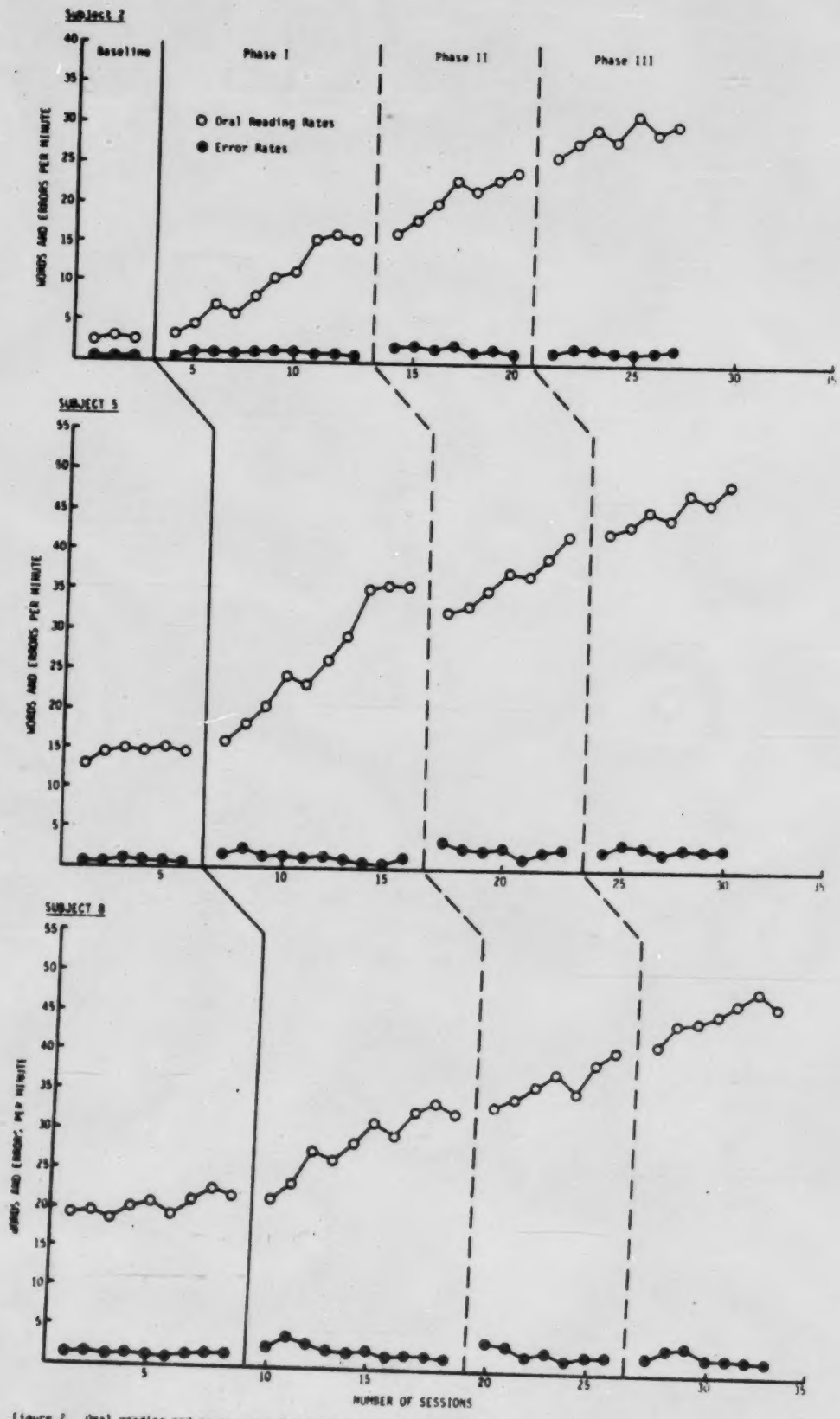

Figure 2. Oral reading and error rates for Group 2.

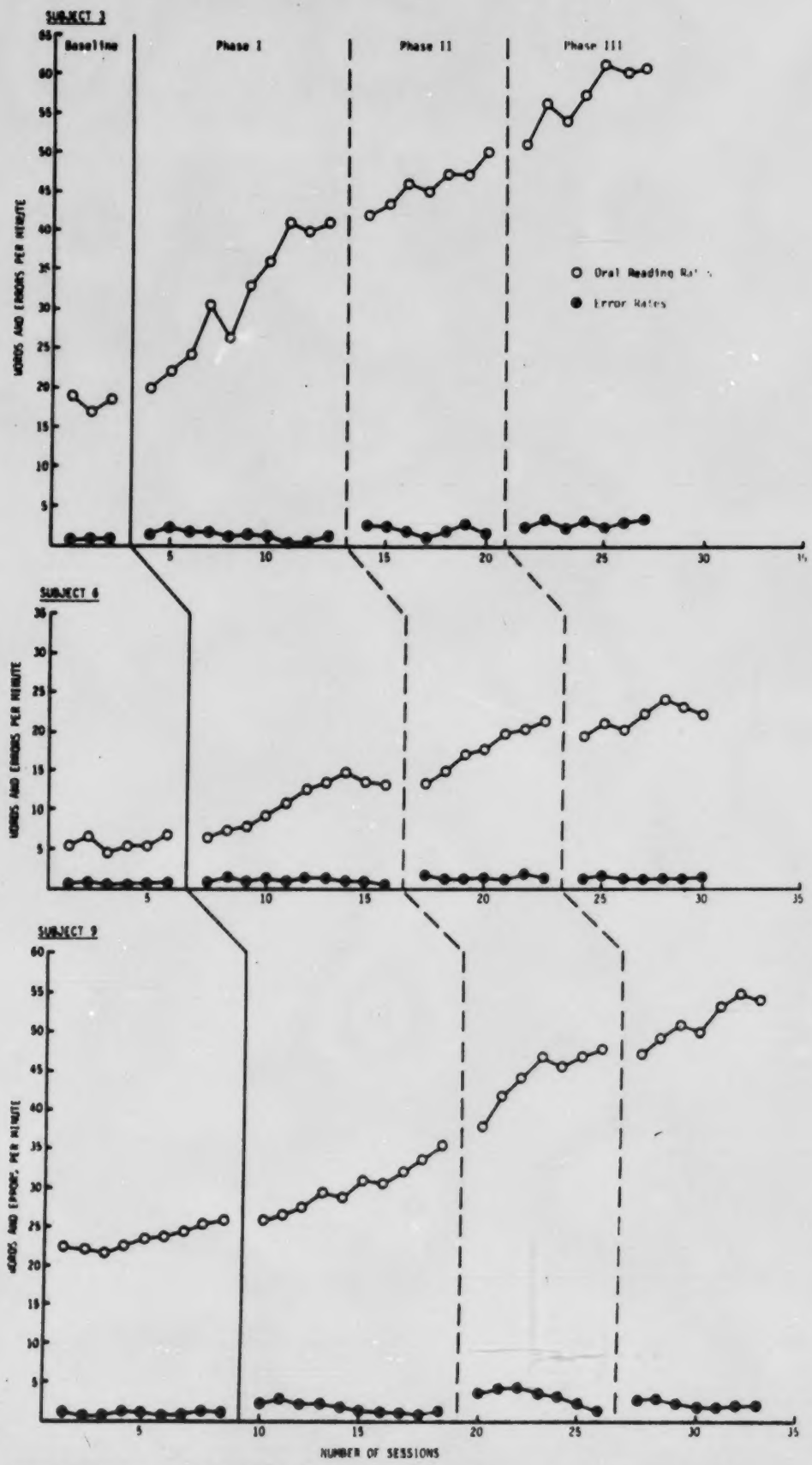

Figure 3. Oral reading and error rates for Group J.

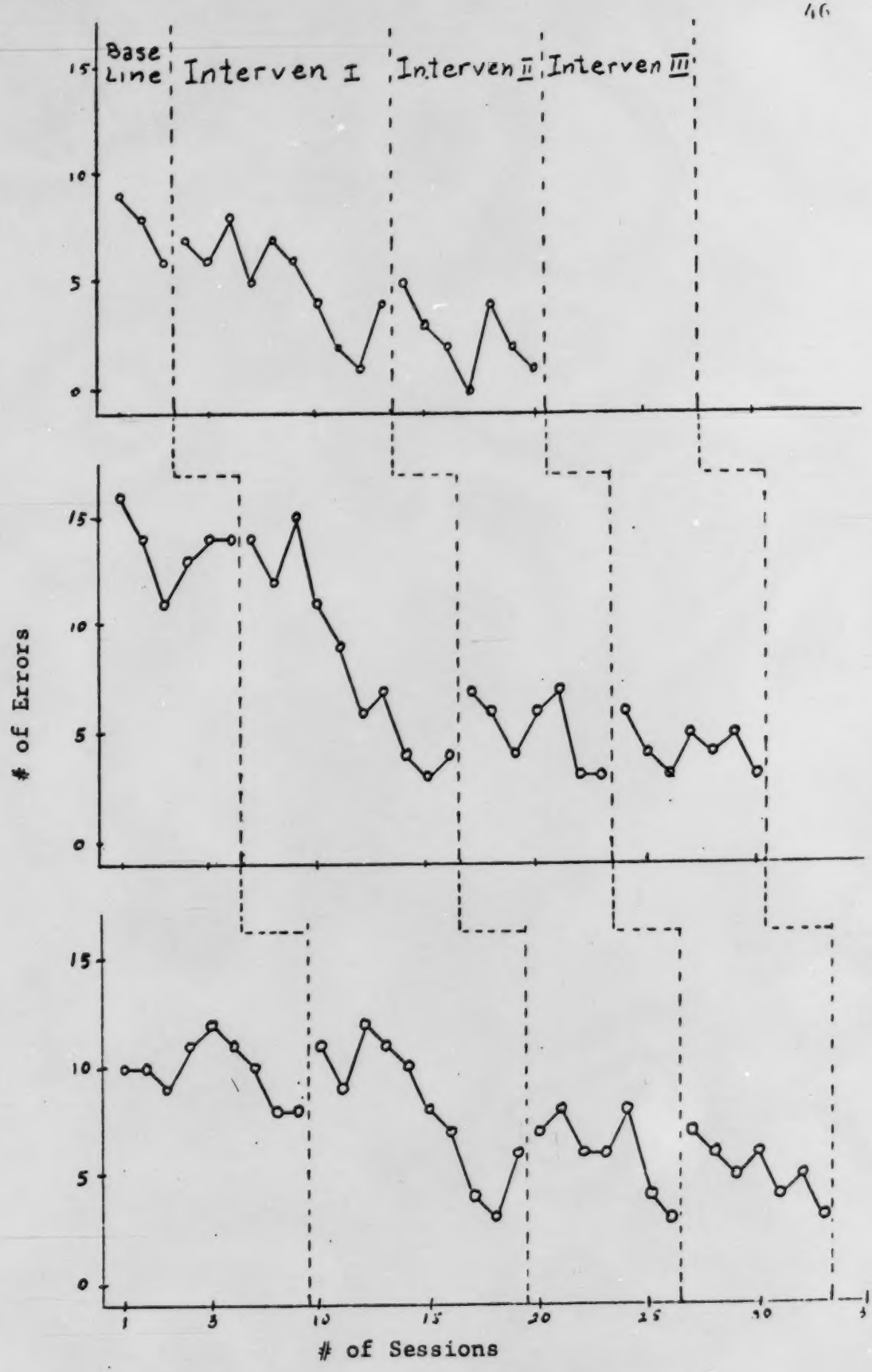

Figure 4 Oral Reading Errors - Group One

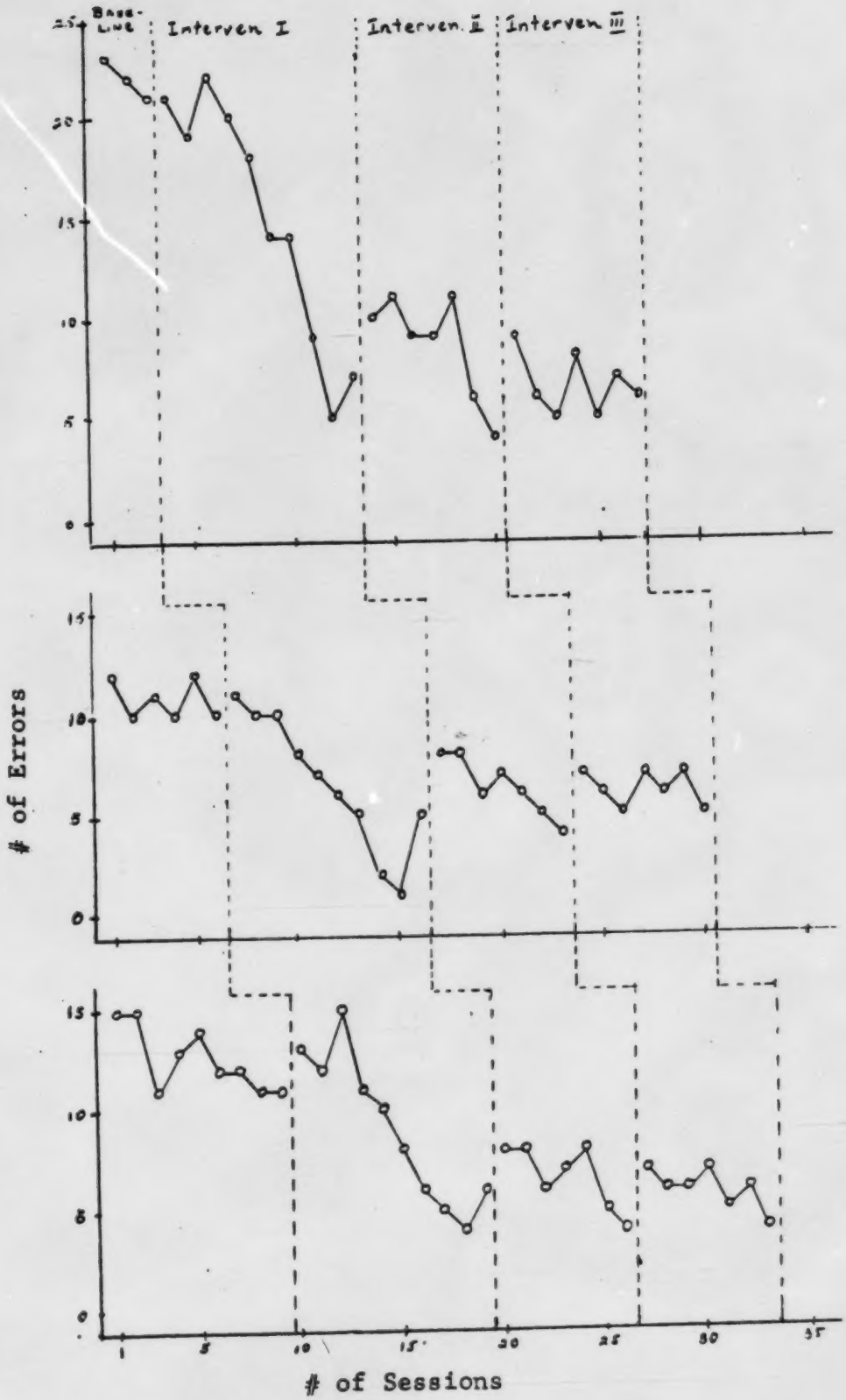

Figure 5 Oral Reading Errors - Group Two

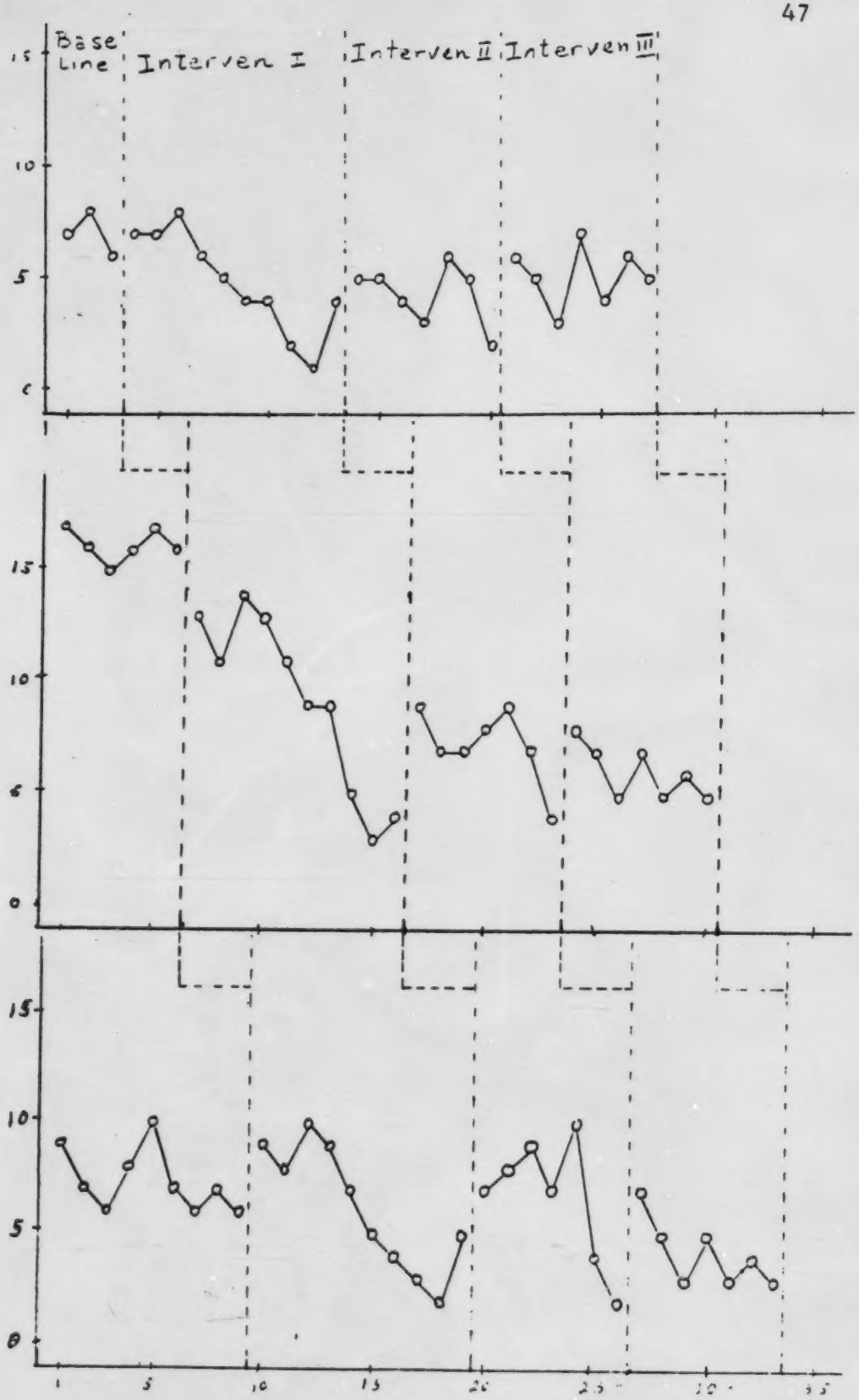

Figure 6 Oral Reading Errors - Group 3

Table 11

Baseline Data for Each Subject per Session

Subject	Session #	Words per Minute	# of Errors
1	1	21.51	9
	2	22.02	8
	3	21.35	6
2	1	2.94	23
	2	3.00	22
	3	2.87	21
3	1	19.40	7
	2	17.68	8
	3	18.05	6
4	1	12.08	16
	2	11.00	14
	3	10.31	11
	4	12.00	13
	5	13.66	14
	6	11.78	14
5	1	13.00	12
	2	14.76	10
	3	15.15	11
	4	14.95	10
	5	15.00	12
	6	14.56	10
6	1	5.71	17
	2	6.67	16
	3	4.32	15
	4	5.09	16
	5	5.00	17
	6	6.73	16
7	1	15.83	10
	2	16.36	10
	3	18.52	9
	4	17.72	11
	5	19.31	12
	6	20.68	11
	7	19.95	10
	8	18.77	8
	9	18.66	8
8	1	19.25	15
	2	19.60	15
	3	18.87	11
	4	20.38	13
	5	21.08	14
	6	19.46	12
	7	21.33	12
	8	22.81	11
	9	22.04	11
9	1	22.44	9
	2	22.49	7
	3	21.80	6
	4	22.58	8
	5	23.23	10
	6	23.66	7
	7	24.35	6
	8	25.00	7
	9	25.77	9

to 3.00 words per minute and the number of oral reading errors was from 21 to 23.

The reading rate for subject #3 was from 7.37 to 9.50 words per minute while the oral reading errors ranged from 6 to 8.

The number of words per minute for subject #4 ranged from 10.31 to 13.66 while the number of oral reading rates was observed to be between 11 and 16 inclusive.

For subject #5, the reading rate was observed to range from 13 to 15.15 words per minute while the oral reading errors ranged from 10 to 12.

The reading rate for subject #6 ranged from 4.32 to 6.73 words per minute with a range of 15 to 17 oral reading errors.

The number of words per minute for subject #7 ranged from 15.83 to 20.68 while the oral reading errors ranged from 8 to 12.

For subject #8, the reading rate ranged from 18.87 to 22.81 words per minute with a range of oral reading errors from 11 to 15.

For subject #9, the reading rate was from 21.80 to 25.77 words per minute while the oral reading errors ranged from 6 to 10.

Intervention

Intervention for all subjects consisted of the sequential presentation of instructional material. Although the intervention period was in three phases with instructional materials for each phase, the investigator's interest was in the overall effect of the intervention period rather than its separate phases.

The reading rate for subject one ranged from 22.72 to 51.38 words per minute with an oral reading error range from 8 to 0. It must be noted that due to additional employment duties, subject

one terminated his training at the end of the second phase of intervention.

For subject two, the reading rate ranged from 3.45 to 31.43 words per minute while the oral reading errors were observed to range from 22 to 4.

Subject three was observed to have a reading rate ranging from 20.00 to 61.11 words per minute with a range from 8 to 1 oral reading errors.

The reading rate for subject four ranged from 12.05 to 36.19 words per minute while the oral reading errors ranged from 15 to 3.

For subject five the reading rate ranged from 15.98 to 48.42 words per minute with a range from 11 to 1 oral reading errors.

The reading rate for subject six ranged from 6.23 to 24.15 words per minute, while the oral reading error range was observed to be from 14 to 3.

Subject seven exhibited a range of reading rate from 22.66 to 50.00 words per minute and a range of oral reading errors from 12 to 3.

For subject eight, the reading rate ranged from 21.65 to 48.64 words per minute, while the oral reading errors ranged from 15 to 4.

The reading rate for subject nine ranged from 25.66 to 54.35 words per minute with an oral reading error range from 10 to 2.

Discussion, Limitations, and Implications

Discussion of Findings

The central purpose of this pilot study was to determine: Would a difference in effective reading with the Optacon be observed when systematic, sequential training is provided stressing language structure, the cloze procedure, and auditory pacing. Two questions were stated to focus the investigation:

Question 1. Would an increase in reading rate with the Optacon be observed when visually handicapped individuals are systematically instructed in language structure?

Specialized instructional materials were presented sequentially and data were collected once each week for each subject. The reading rate was calculated based on the formula:

$$\frac{\text{Number of Words per Passage}}{\text{Number of Minutes Read}} = \text{Rate (words/minute)}$$

Upon inspection of the data as represented graphically in Figures 1-3, it is observed that a considerable increase in the reading rates for each subject from baseline condition to the termination of the intervention condition was attained. The mean rates for each subject achieved during baseline and intervention conditions are reported in Table 12.

The considerable increase in reading rate for each subject from baseline through intervention would indicate that the sequential presentation of the instructional materials had an overall positive effect. Inspection of the data presented in Table 11 indicates that the average reading rates of the last seven data sessions of the intervention (Phase III) showed

Table 12

Mean Oral Reading Rates per

Baseline

Intervention Phase

Subject	Baseline	Phase I	Phase II	Phase III
S1*	21.64	30.86	48.82	
S2	2.94	7.79	20.95	28.89
S3	18.37	26.25	46.00	57.30
S4	11.84	15.71	25.92	34.21
S5	14.51	24.55	36.58	45.54
S6	5.51	10.04	17.62	21.85
S7	17.86	30.23	40.65	50.24
S8	20.41	28.47	36.45	45.09
S9	23.38	29.70	43.94	50.66

*Subject dropped out of the investigation after 13th session

increases ranging from 116% to 880%. It might be argued at this point that practice reading during the time allotted for it also had an effect in the reading rate. While the investigators are aware of this it must be stated that the practice materials provided to the subjects were in support of the instructional materials, i.e., they reflected the nature of the instruction during each session, and as such they provided the subjects with a better understanding for reading with the Optacon.

It should also be noted that conclusions regarding the differential effect of any one phase of the intervention on reading rates cannot be drawn. The data presented in Figures 1-3 generally reflect a linear increase in reading rates across the various intervention phases. That is to say the slope of the accelerating rates remains relatively constant from one intervention phase to another. This result may be a function of the design itself since the time at which phase changes occurred were predetermined before data collection occurred.

In retrospect, a better procedure would have been to determine in advance criteria for stability and proficiency necessary before a phase change would occur. A more sophisticated design than this multiple baseline A-B design would also allow one to distinguish among the effects of different instructional tactics.

Question 2: Would systematic instruction in language structure decrease the number of oral reading errors in reading with the Optacon?

The procedure for obtaining data on oral reading errors was described earlier in this report.

Inspection of the graphic representation of the data in Figures 4-6 reveals that there was a small decrease in the oral reading errors from baseline condition through the intervention condition (Table 13). The decrease of errors, however, varies from phase to phase in the intervention condition. The investigators believe, however, that such variability reflects the nature of the instructional materials. It must be noted that, over all, the greatest decrease in errors was observed during the first phase of the intervention condition. The instructional materials during this phase focus on the structural aspects of the language encouraging the students to concentrate on that aspect of the reading process and resulted in a decrease in the oral reading errors. As the second and third phase of the intervention condition were implemented, a slight increase of the oral reading errors was observed. The instructional materials for these phases centered on redundancy in the language and thereby on the predictability of language and reading materials. The subjects were encouraged to employ that aspect of the language in reading with the Optacon which resulted in the increase of the oral reading errors. This increase, however, did not reach the number of errors observed during the baseline condition. Therefore, it may be concluded that through the systematic instruction of language structure and language predictability the overall oral reading errors were considerably decreased.

An overall inspection of the data indicates that the nature of the instructional materials and the order of presentation of these materials resulted in an increase of the reading rate and a

decrease in the oral reading errors while visually handicapped subjects employed the Optacon as a reading device.

Conversion of frequency of oral reading errors into rates of oral reading errors (i.e., $\frac{\text{number of errors per session}}{\text{time in minutes}}$ = errors per minute) was undertaken to ascertain if intervention procedures had an effect on oral reading error rates. Error rates per session are graphically illustrated in Figures 1-3 and the mean error rate per baseline and intervention condition are contained in Table 12. The data indicate that baseline error rates were not markedly accelerated or decelerated by the interventions employed in this study. Thus one can conclude while the interventions employed decreased the total oral reading errors per session, they had little impact on the rate at which they occurred.

Indirect evidence for this study's impact on reading rates is also supplied by data obtained from other sources. Silent reading rates of naive Optacon readers (N=500) who completed 50 hours of training averaged 11.5 words per minute (Brewer, Note 1). Similar rates were reported by Schoof (1975) for students who received 50 hours of training. Reading speed (silent rates) measurements taken under controlled conditions on a sample of 22 from over 240 blind students training at TSI averaged 22.4 words per minute after an average period of one year following training.

Inspection of Table 12 indicates that project participants initial reading rates fell within the range reported in the TSI one year follow up. Mean reading rates for subjects in the last phase of intervention ranged from 21.89 to 50.66. As oral

Table 13

Mean Number of Errors and Mean Error Rates per Subject During Baseline and Intervention Phases

Subject	Baseline		Phase I		Phase II		Phase III	
	$\bar{x}$#	$\bar{x}$ rate	$\bar{x}$#	$\bar{x}$ rate	$\bar{x}$#	$\bar{x}$ rate	$\bar{x}$#	$\bar{x}$ rate
1	7.60	1.03	5.00	1.47	2.40	1.29		
2.	22.00	.40	17.00	1.26	8.57	1.96	6.57	1.82
3	7.00	.80	4.80	3.62	4.28	2.15	5.14	2.83
4	13.67	.93	8.50	1.28	5.14	1.42	4.28	1.41
5	10.83	.90	6.50	1.53	6.28	2.52	6.14	2.68
6	16.17	.51	9.20	.88	7.28	1.41	6.14	1.25
7	9.89	1.07	8.10	2.28	6.00	2.67	5.14	2.48
8	12.67	1.57	9.00	2.45	6.57	2.62	5.86	2.53
9	7.33	1.04	6.20	1.76	6.71	3.23	9.28	2.08

reading rates are generally regarded as slower than silent reading, this comparison offers conservative evidence for this intervention's impact.

It is of interest to note that Braille reading rates (ascertained at the start of this study) and mean oral reading rates obtained during the last phase of intervention were significantly correlated ($r = .67$, $p < .05$). While this coefficient is based on a small number of subjects, it does indicate a strong direct relationship between these two skills, that is to say, that subjects with higher braille reading rates had higher oral reading rates with the Optacon. Further research is needed to confirm this finding which suggests a significant amount of common variance between these two reading skills.

Limitations of the Study

The results and discussions of this study must be viewed in light of several limiting factors evident in this research.

No statement can be made regarding generalization of the results of this study to a wide range of visually handicapped individuals, and particularly to children, due to the small number and variability in age of the subjects. However, the results of the study in conjunction with numerous approaches to reading reported in the literature indicate that employing language structure and language predictability in reading with the Optacon have been effective in increasing the reading rate while decreasing the oral reading errors.

The method of development and presentation of the instructional materials is another limiting factor. Since the materials were

developed specifically for this study and this set of subjects, they may not be effective with other groups of subjects with different levels of reading ability. The Subjects had previous instruction in reading with the Optacon, as well as having completed at least twelve years of formal education. The presentation of the materials, particularly those of the first phase of intervention dealing with language structure, did not follow a developmental approach of language acquisition as might be required for teaching beginning reading to young children. The materials selected for practice reflected the interest levels of the Subjects which, of course, was a motivating factor.

All but two of the Subjects (Subjects four and six) possessed Optacons, and had the opportunity to continue reading with the Optacon at home. Although reading at home might have been limited, it more than likely influenced to some degree, the increase in reading rates. The extent of this relationship however, is difficult to determine.

Another limiting factor lies in the stipulated period of instruction: 24 hours of instruction and 24 hours of practice reading, during the intervention condition. Additional hours of instruction would have, perhaps, yielded higher reading rates.

The materials used for oral reading, although selected on the basis of readability, were not of equal length. This fact, to some extent, might have had an effect on the reading rate as well as on the number of errors.

Although the setting was familiar to the subjects, the time that each session was held (late afternoons and evenings) may

have had a retarding effect on the reading rates and may have been a contributing factor to the reading errors.

Another factor influencing the study may have been the data gathering procedure itself. It is a commonly accepted fact that oral reading rates are lower than those in silent reading. Recording oral reading on audio tape in order to analyze errors may have had a retarding effect on potential reading speed. As is typical in oral reading, measures of the subject's comprehension of material were not obtained. Future research would be enhanced by including investigation of that facet of the reading process when language structure procedures are employed.

Future research investigating the effects of systematic instruction in language structure could also benefit from alterations in the experimental design employed in this study. A design similar to the one illustrated in Figure 7 could provide a better means of differentiating the effects of the various strategies used in this study. This design coupled with established criteria for determining when to initiate phase changes (i.e., stability and proficiency criteria) would enable the investigator more effectively to ascertain the relative efficacy of alternative instructional procedures.

Implications of the Study

The results of the present study indicate that visually handicapped individuals reading with the Optacon can increase their reading rate and decrease the oral reading errors through systematic intervention beyond the initial training for reading with the Optacon as is currently practiced by many Optacon programs in

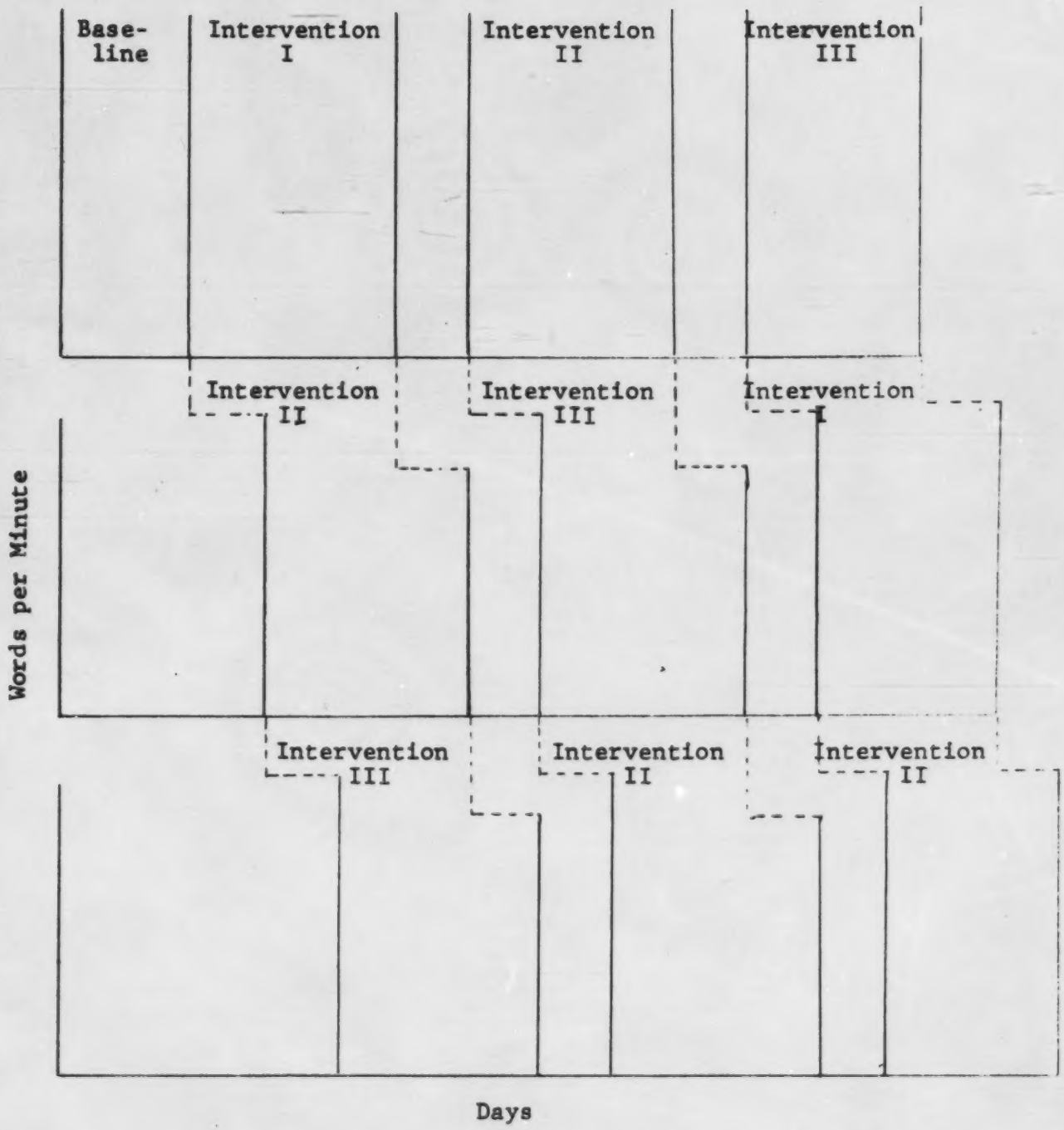

Figure 7 - Proposed Design

rehabilitation centers and schools. Although the reading rate for Optacon users may never reach rates comparable to reading in other modes, efficient Optacon reading enables the totally blind individual to have access to and function with relative success in a complex information storage and retrieval system designed for the sighted.

In many mainstream classes where blind youth are increasingly educated, the traditional use of a single textbook is frequently replaced with a discovery approach to instruction and learning through a variety of publications and independent reading (Moore, 1977). The ability of a totally blind student to read efficiently with the Optacon will promote his success in the classroom with a minimum of intermediate braille transcription, audio tape recording and/or direct reader services. Recent technological advances in braille duplication and audio tape recording techniques have to some extent facilitated access to needed materials. However, in some cases the most efficient approach to resolving these problems is the ability of the totally blind individual to use print directly in his endeavor. The results of this study suggest that through further training in language structure and language predictability visually handicapped individuals can develop substantially improved abilities to read print directly. As the literature points out, effective reading requires skills in the structural analysis of the language and an awareness of its predictability. The findings of this study imply that instruction with materials selected or designed specifically to emphasize these elements of the language results in developing increased skills for efficient reading.

In planning an instructional program and providing related materials consideration should be given to the development of such skills through materials that are of interest to the trainee.

Recommendations

The following recommendations are based on the findings of this study:

1. Instruction and practice in understanding language structure was effective in increasing the reading rates of the participants. Promising leads for research for additional research were identified through this pilot study and replication is recommended.

2. When possible, replications should include a more complex design to determine the differential effects of the intervention conditions employed in this study.

3. The impact of the use of language structure procedures on comprehension should be studied through both silent and oral reading.

4. As this study employed young adult readers, a similar study with school children and youth would be useful.

5. Given the correlation obtained between rates of braille reading in this study, research investigating the common variables associated with successful braille and Optacon reading skills should be undertaken.

6. A more detailed investigation of the number, type and rate of reading errors would be useful. Descriptive data of this type could provide investigators with important clues for

curriculum design and for materials development. This would be especially important with younger children and youth.

7. This investigation indicated a need for a wide variety of conceptually based instructional materials at interest and difficulty levels relevant to all grade and age levels.

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APPENDIX A

BASELINE READING PASSAGES

My Average Uncle

Uncle Amos was easy on his wives and children. He had three of them, in all. Wives, I mean. I never did get the count of his children straight. There were too many assortments of them. Three wives. It seemed surprising to me at the time. With all the trouble I had myself, having to stand on my head, or throw stones at birds, to keep the attention of just one girl for a month. I often wondered how Uncle Amos, who never stood on his head or threw stones at birds, could attract so many women as he did. With hair, a little thin on his head, and legs that could not possibly do more than three and a half miles an hour on the road, there he was, with three families behind him. Of course, he had the families spaced. The wives of Uncle Amos did not come all at once. They were drawn out. One batch of children grew pretty well up by the time the next batch came in sight, waddling and falling on their faces.

Thinking Machines Are Getting Smarter

The present computers grew out of the early tabulating, calculating and teletype machines. Combined into one complete system, and speeded up by electronics, the most advanced of them can solve any problem that can be expressed in writing. Here, briefly, is how they work. An operator types information and instructions on a special typewriter that converts letters and numerals into a code of dots on a magnetic tape. The computer then reads these signals and sends them to its central brain or memory, which consists of thousands of pinhead-size iron doughnuts or cores, each linked electrically to all others.

This memory temporarily stores partial answers to a long problem until the computer's ingenious circuits call them out at the right moment to complete the answers. It also permanently stores for repeated use such standard data as logarithm tables or withholding-tax figures. The actual calculating is then done on orders from an instruction tape that tells the computer precisely what to do with the stored information.

20,000 Leagues Under the Sea

After some minutes, a loud hissing was heard. I felt the cold mount from my feet to my chest. Evidently, from some part of the vessel, they had given entrance to the water, by means of a tap, and the room was soon filled. A second door, cut in the side of the Nautilus, then opened. We saw a faint light. In another instant our feet trod the bottom of the sea.

And now, how can I retrace the impression left upon me by that walk under the waters? Words cannot relate such wonders! Captain Nemo walked in front, his companion followed some steps behind. Ned and I remained near each other. I no longer felt the weight of my clothing, or of my shoes, of my air tank, or my thick helmet.

Don't Be A Pal To Your Son

There are many different attitudes on how to treat American youth. One we heard recently comes from Al Capp, the cartoonist, who was once a boy himself. Mr. Capp, father of three, told us in what might be his last interview:

"When I was six years old my parents put me in a clean shirt, pointed out the direction of school and told me not to come back for eight years. They never expected to see my teachers and the teachers never expected to see my parents. Each one had a function. My parents were supposed to feed and clothe me; my teacher was supposed to teach me how to read and write. Neither group had any effect on the other. The only thing my parents knew about my teacher was 'she was always picking on me.'

"My teachers graded me on arithmetic, English, history, and geography. Since I failed all of them, it was obvious I was going to be a cartoonist."

My Average Uncle

But we nephews did not pass him by. We were strangely drawn to him. Especially when some of our specialist uncles wore us down with their crankiness and difference. I spent some of the quietest Sundays of my life in Uncle Amos's yard, lying under apple trees and listening to bees and not listening to Uncle Amos. He was bumbling away at something he did not expect me to listen to at all. And caterpillars came suddenly down on fine wires shining like gold, and hit Uncle Amos on his bald spot, and he brushed them off and went on bumbling. The heat was a burden, and the apple blossoms fell to pieces and drifted down on me, and I could see the roof of the world over the black twigs they came from. These were my solidest hours of pure being. I did not have to do anything to live up to this quiet, friendly man. He did not expect me to stand on my head and show off, or go after his pipe, or keep the flies from lighting on his bald spot. And he always had lemon drops somewhere deep in his roomy pockets, fore or aft, and he liked to give them to me.

Every Dog Should Own a Man

Every dog should have a man of his own. There is nothing like a well-behaved person around the house to spread the dog's blanket for him or bring him his supper when he comes home man-tired at night. Properly trained, a man can be a dog's best friend.

I happen to belong to a medium-sized English setter, who acquired me when he was about six months old and has been training me quite successfully ever since. He has taught me to shake hands with him and fetch his ball. I've learned not to tug at the leash when he takes me for a walk, and I make him a devoted companion. In fact, my setter has broken me so thoroughly that I have decided to set down a few of his basic rules of manhandling, as a guide for other dogs.

The first problem for a dog is to pick out the right man. A dog should exercise great care in making his choice, since he is apt to become quite attached to the man and will find it hard to get rid of him later if he proves unsatisfactory.

Thinking Machines Are Getting Smarter

The checker-playing computer knows every move of every game stored in its "memory," and it displays uncanny powers: it will sacrifice a piece to gain a future advantage; and it marks the plays that have led to losing games. When it next encounters the same situation, it selects a different move from its repertoire. The result is that it shows improvement in almost every game, and now easily defeats anyone except a real expert. To watch it print: "Expect to win in five moves" gives some observers an uneasy feeling.

Computer men, thrilled by the powers of the genie they have created, like to speculate on the tremendous promise it holds for human advancement. "Computers open up scientific possibilities that were unthinkable before," says Ralph J. Cordiner, Chairman of the Board of General Electric Co. "They will make possible entirely new products and industries. These computer-derived technologies will be a major source of new employment in the coming decades."

Project #710740

Jaws

The great fish moved silently through the night water, propelled by short sweeps of its crescent tail. The mouth was open just enough to permit a rush of water over the gills. There was little other motion: an occasional correction of the apparently aimless course by the slight raising or lowering of a pectoral fin--as a bird changes direction by dipping one wing and lifting the other. The eyes were sightless in the black, and the other senses transmitted nothing extraordinary to the small, primitive brain. The fish might have been asleep, save for the movement dictated by countless millions of years of instinctive continuity: lacking the flotation bladder common to other fish and the fluttering flaps to push oxygen-bearing water through its gills, it survived only by moving. Once stopped, it would sink to the bottom and die of anoxia.

Friend Within The Gates

It was characteristic of Edith Cavell that she should choose to start her nursing career in the hastily erected emergency Fountain Hospital -- built to house the overflow of typhoid victims from the squalid slums of London. This was the place where she felt she was most urgently needed -- and that was enough for her. And the three months she spent in its flimsy wards, among its half-finished pathways, its "temporary" surgeries and storerooms, served to convince her, if she had ever doubted it, that here, at last, was the job she had been looking for throughout most of her thirty years; the job towards which she had been groping when she told her cousin Eddy: ". . . it must be something for people. They are, most of them, so helpless, so hurt and so unhappy."

APPENDIX B

INTERVENTION READING PASSAGES

Police in Janesville, Wisconsin, caught Michael P. Carlson intimidating a cornered rat at 3:00 a.m. on a downtown street. Carlson said the rat had bitten him, but the officers claimed that they could see no rat bites on Carlson's body, and ordered him to leave the rat alone. Carlson then tried to throw his coat over the rodent, and was arrested.

From an editorial in the Columbus, Ohio, Citizen-Journal:

"It's bad enough that Columbus has so many prostitutes....but -- pound for pound -- we must have some of the heaviest and homeliest hookers in the country."

Friend Within The Gates

The little boy on the bed by the window started to whimper again. Cradling him in her arms and looking down at his waxen face her heart ached, and her mind was in a turmoil. How could she be really sure that the hospitals had changed? How could she be sure that there really would be someone -- someone kind -- to watch over her child and give him the care he needed?

All through the night she lay sleepless, her ears alert for the slightest sound from either of her children. Beyond the dirt-streaked window darkness had fallen and the day-time scunds of the street had died away. Inside it was silent except for the muttering of the old man in his corner and the moans of the sick child. From time to time she bent over and looked at him by the light of a flickering candle. Towards morning she could see that he was worse. He lay motionless on his hard little bed, blue shadows about his lips. By the time daylight groped its way into the bare and cheerless room to touch his face, Lizzie knew that she had no choice.

Friend Within The Gates

The attendant was touching her arm. "If you give me the doctor's note, I'll give it to Nurse Cavell -- then you can take the nipper straight into the ward," he said kindly. Lizzie handed over the precious piece of paper and the attendant disappeared. Lizzie looked round again at this new, strange place which looked so unlike a hospital to her. Men in dark coats and women in crisp, starched aprons hurried along the paths between the hutments, their faces set and preoccupied. There was a sense of urgency about all of them, and they looked tired and strained. How could they, remote and busy as they were, really care about a little boy who meant nothing to them?

There was a sound of quick, light footsteps behind her and she turned. The woman approaching her was small, and very slender. Her brown hair was brushed back from her face and almost concealed by the white cap she wore. But it was her eyes which riveted Lizzie's attention. Brilliantly clear and gray, they seemed to look straight into her mind and heart, and to understand what they saw there. In spite of her fears of a few minutes earlier, she found herself willing to surrender Johnny for the first time since he became ill. And as she put him into the nurse's arms, it seemed that the burden had been taken not only from her arms but from her heart.

Friend Within The Gates

It was difficult, sometimes, to carry the hot food along the dusty lanes in a basin which almost burned her fingers, knowing that her own food was cooling on the table in the vicarage dining room, and that by the time she returned from her long walk it would be disagreeably cold and unappetizing on her plate. It was hard to wait patiently as the hungry families thanked her, with tears in their eyes, for her father's generosity, while all the time the savory scent of the meat in the basins they clutched tantalized her nose and set her mouth watering with hunger.

But if she ever thought of rebellion, she gave no sign. Deep in her heart she understood her father's urge to help the helpless, feed the hungry and bring comfort to those in distress, even though her father's way of doing these things was not always the way she herself would have chosen. For him, duty to his fellows was a burden laid on him by the hand of God, whereas for her, as for her mother, to help those in distress was something much more personal; something as necessary to her as it was to those she helped: a practical joy, not a cross to be borne with fortitude.

Entertainments were few in the English countryside at the turn of the century, and the Cavell children learned to make the most of the simple pleasures which lay close at hand. Edith soon discovered the joys of drawing and painting the country scenes around her home, and when her younger sisters and brother were too small to read, she drew pictures for them, as well as for her own amusement. Her skill grew quickly, and with it her pleasure increased. But even this talent she turned to use for others in a most practical manner.

Friend Within The Gates

Here at home were people who needed her more. Her father, who had always been so busy and active helping others, lay uncharacteristically still and helpless. Her mother's face was drawn with anxiety and fatigue.

Edith's hands, which had gently tended the Francois children when they were hurt, had the same gentleness as they tended her father, and she brought comfort to her worried mother as she had to Helene and Evelyn when childish griefs overwhelmed them.

But she could not stay there long. The rules laid down that to become a fully trained nurse she must spend at least one year at a general hospital where formal training was given. There were several teaching hospitals for her to choose from. Perhaps it was a kindly fate which led her to choose the London Hospital. Or perhaps she heard the other nurses at the Fountain talking about the hospital which had been famous in the East End for more than a hundred and fifty years already. If so, she would certainly have heard them talking about its Matron, Miss Luckes who, in her way, was almost as much of a legend as the hospital itself.

Even so, as she sat in her tiny, boxlike room at the Fountain carefully filling in the form of application which was to set her feet on the road from which she was never to deviate for the rest of her days, Edith could hardly have realized that it would soon be in the hands of the woman who, after her mother and Miss Gibson, was to be the greatest influence in her life.

But only a few yards away stood the vast building in which she was going to be able to help them. With a lift of the heart she looked again at the intimidating, fortress-like facade across the road, then, accepting the silent challenge it threw out above the clatter of horses' hoofs and the rattle of wheels, she crossed the road and climbed the shallow flight of steps. The door swung to behind her. At last, her real life had begun.

Friend Within The Gates

There followed for Edith five long years of work and study; of long hours and very little financial reward; of restrictions, self-discipline and the gradual acceptance of the horror of suffering and death. Many years later, she was to say: "I have seen death so often it is not strange or fearful to me . . ." It was at the London that she first came face to face with death in its more terrible forms, and was to recognize that it could also bring peace and release from suffering, as often as it brought sadness.

If she ever paused, wistfully, and leaned her aching head against the smeared glass of the little window of her cell-like room and gazed down at the seething streets below, it was to remember the lanes of Norfolk; powdered over with summer dust, and the song of the birds in the vicarage garden. She was still, at heart, a countrywoman and missed the quiet pleasures of village life. Whenever possible she spent her scanty off-duty time in the country round about London with one of the other nurses with whom she made friends.

Friend Within The Gates

Her nursing experience was opening out in other ways, too. She had begun to lecture to the senior probationers, and here she found her skill at drawing invaluable. The delicate water colors of the English countryside now gave way to anatomical diagrams, but the basic skill she needed and possessed were the same.

15
24

Teaching was overtaking learning by now and it became overwhelmingly clear that this was where her true vocation lay. To save one sick child was a work of mercy, but to hand on her training to twenty new nurses might mean the gift of life and happiness to twenty sick children. Never in the slightest degree conceited, she knew her own worth both as a nurse and a teacher, and the years at Shoreditch merely served to convince her that it was in the latter field that her best work would be done.

Friend Within The Gates

It was a damp, depressing day in spring when the letter arrived on Edith's desk. She eyed it curiously. She was not expecting a letter from Brussels, and the writing was unfamiliar. Could it be news of the Francois family? If so, coming from a stranger it must be bad news! She slit the envelope quickly and glanced at the signature. "Depage": the name meant nothing to her; but the letter was a long one. She settled down to read.

Friend Within The Gates

The girls themselves, brought up in the free-and-easy atmosphere of Brussels, did not understand the meaning of self-discipline. They arrived late on duty, chattered and gossiped when they should have been working, and flatly refused to accept the month of night duty which was a part of their contract. They would, they declared, do no more than a week at any one time.

Friend Within The Gates

Quite early in the school's existence one of the young probationers, still unused to the minor details of hospital etiquette, offended the great doctor's idea of what was proper.

She could hardly have chosen a worse morning. Dr. Depage had spent the previous day operating in difficult circumstances, on a difficult case. He had been visiting patients until late in the evening, and a number of problems in connection with the new training school had cropped up after that. He was tired and harassed; impatient with the slowness with which the new venture was getting under way and inclined to be critical of everything in the new nursing home from the patients' diet to the color of the paint. The young nurse's carelessness was the last straw.

Quietly Nurse Cavell rose to her feet and crossed to the door. "I am afraid I cannot discuss the matter further with you while you continue to use such objectionable language, Dr. Depage," she said firmly, her eyes -- usually so full of sympathy -- as cold as the flints of Swardeston Church. "Perhaps we can take up the matter when you are more yourself."

She shut the door of the office noiselessly behind her, leaving Dr. Depage open-mouthed and, for once, silenced.

Friend Within The Gates

Always before her she had the ideal of her own training, and she knew that as the new nursing service in Belgium began, so it would continue. The standards set by the first probationers would be those they passed on to the long line of those who were to come later; and it was by their behavior that the great jury of the Belgian people would judge the success or failure of her work.

Friend Within The Gates

For the first three months Edith felt that she was walking along a tightrope over a bottomless pit. If she leaned too far to one side she risked offending someone who could wreck the precious school; if she leaned too far to the other, she would be false to her own ideals -- something equally unthinkable.

Something was needed to draw all of those concerned in the new venture closer in understanding -- something about which they all felt deeply, and which they all understood in the same way. When it came it was something outside nursing altogether, yet which touches every hospital, and everyone who works in one with a special magic: Christmas!

Friend Within The Gates

She still needed, desperately, women who understood and appreciated what she was trying to do. Women she could trust to carry on when she was absent as they would when her eyes were upon them. Women inspired by the same complete conviction as she was that this work was the greatest, and most rewarding that life had to offer them. It was a lot to ask. There are few enough Edith Cavells in the world at any one time; to expect to find more than one of them in any one place at once was asking for a miracle.

Friend Within The Gates

The news was broken to Edith as soon as it arrived in Belgium. After she had heard it she became, to her nurses, an even more remote and withdrawn figure. She remained always kind and gentle, thoughtful for others and sensitive to their needs, but she herself was unreachable. Only Sister Wilkins, loving and understanding her more than most, could get near to her and even she felt the wall of reserve shutting her out from full companionship. Edith Cavell had always been a single-minded person, with a strong driving force urging her on to do the work she felt she was born to do: now that work crystallized, for her, into the necessity for defending, almost singlehanded, a growing army of wanted men.

It was, as she said, a plan which might have come out of an adventure story of the most lurid kind, and quite out of keeping with her character; but more and more, as the war dragged on, Edith Cavell found herself acting out of character: taking decisions and chances which were contrary to her upbringing and nature. Throughout those months of unreality she kept her eyes fixed on the one guiding star which had never ceased to shine over her life: to save and succor those in distress, whoever they were.

APPENDIX C

FORMS

II. FORMS

Protocol No._____

RESEARCH INVOLVING HUMAN SUBJECTS
CONSENT TO SERVE AS A SUBJECT IN RESEARCH

BEHAVIORAL AND SURVEY RESEARCH FORM

I consent to serve as a subject in the research investigation entitled:_____
A Pilot Study and Research on Increasing Reading Rates
with the Optacon.

The nature and general purpose of the research procedure have been explained to me. This research is to be performed by or under the direction of Dr. S. C. Ashcroft, who is authorized to use the services of others in the performance of the research.

I understand that any further inquiries I make concerning this procedure will be answered. I understand my identity will not be revealed in any publication, document, recording, video-tape, photograph, computer data storage, or in any other way which relates to this research. Finally, I understand that I am free to withdraw my consent and discontinue participation at any time following the notification of the Project Director.

Signed_____
(Subject)

Date_____

Time_____ A.M. P.M.

_____
Witness

_____
Investigator

PA-027

WEEKLY SCHEDULE FOR OPTACON PARTICIPANTS
INSTRUCTION AND PRACTICE

NAMES	MONDAY		TUESDAY		WEDNESDAY			THURSDAY		FRIDAY
	7	8	7	8	4:30	6	7:30	7	8	4:30
1.	I					P				
2.				P					I	
3.								I	P	
4.		I					P			
5.			I					P		
6.					P					I
7.					I					P
8.		P		I						
9.	P					I				

Alternates:

I = Instruction

Project Number: 710740

Prepared by: Ivan Terzieff
Linda Kirkland
Patty Overholt

DAILY LOG

Subject #_____

CONDITION	PASSAGE #	# OF WORDS	TIME IN MINUTES	WORDS PER MINUTE	# OF ERRORS

APPENDIX D

PRACTICE READING PASSAGES

The Hobbit

In a hole in the ground there lived a hobbit. Not a nasty, dirty, wet hole, filled with the ends of worms and an oozy smell, nor yet a dry, bare, sandy hole with nothing in it to sit down on or to eat: it was a hobbit-hole, and that means comfort.

It had a perfectly round door like a porthole, painted green, with a shiny yellow brass knob in the exact middle. The door opened on to a tube-shaped hall like a tunnel: a very comfortable tunnel without smoke, with panelled walls, and floors tiled and carpeted, provided with polished chairs, and lots and lots of pegs for hats and coats -- the hobbit was fond of visitors. The tunnel wound on and on, going fairly but not quite straight into the side of the hill -- The Hill, as all the people for many miles round called it -- and many little round doors opened out of it, first on one side and then on another. No going upstairs for the hobbit: bedrooms, bathrooms, cellars, pantries (lots of these), wardrobes (he had whole rooms devoted to clothes), kitchens, dinningrooms, all were on the same floor, and indeed on the same passage. The best rooms were all on the left-hand side (going in), for these were the only ones to have windows, deep-set round windows looking over his garden, and meadows beyond, sloping down to the river.

The Handicapped: Hidden No Longer

Hillam is a gregarious man with a tumble of dark hair and a serious turn of mind. Since college, he has directed his feelings into the movement to improve life for the handicapped. "You can see why we've crept out of the attics and said, 'Hey, cut this out,'" he says. "We're not looking for gifts. We want the same things everyone else on earth has. We have been denied our civil rights. And we want them. A lot of children are born or become disabled. If we don't do something, those children won't be able to get about, won't have friends, won't have jobs, and will be brainwashed into thinking they're worthless monsters. So this movement isn't going to go away. Quite the contrary, it's going to grow and grow and grow."

The handicapped--the blind, crippled, deaf, mentally retarded--have mobilized into a civil rights movement for the 1970's. They have organized and lobbied for what most Americans take for granted: a drink of water at a public fountain, access to buses or subways, a way in and out of buildings, the right to attend the schools of their choice, and the freedom to live independent lives with dignity. The disabled constitute a unique minority, embracing every race and religion, both sexes and all ages. And, as handicapped groups like to point out, membership can be conferred on anyone at any time--by disease, by accident, by heart attack or stroke. "Not anyone can become black or a woman," says one movement leader. "But anyone can become handicapped. You could tomorrow."

Send Your Frog to Camp

The annual frog-jumping contest in California's Calaveras County, which Mark Twain made famous, won't happen until next May; but contestants are being warned by the world's only university for frogs that now is the time to begin training those jumping amphibians for the big event. This is the word from Doctor of Frog Psychology Bill Steed, who also happens to be the president of Croaker College.

Croaker College, in Sacramento, offers a three-week special cram course for serious-minded jumping frogs. For $50, each frog gets room and board, weight-lifting training, sauna baths, bubble baths and hypnotic treatments from Dr. Steed. Among the 250 jumping alumni of Croaker College, Steed says, are several Calaveras winners.

Croaker College can be reached at (916) 489-2521.

True Section

Gaboo Miyan, a farmer in India, was bitten by a rabid dog. Miyan suffered no ill effects, but the dog promptly died. Five months later, Miyan was bitten by a krait snake, whose poison is considered five times deadlier than the cobra's. Again, Miyan was not affected, and the next day the krait was found dead on the ground near where it had bitten him. Miyan attributes his apparent immunity to rabies and snakebite to his consumption of large quantities of the kuchela herb, which contains strychnine.

Police in Janesville, Wisconsin, caught Michael P. Carlson intimidating a cornered rat at 3:00 a.m. on a downtown street. Carlson said the rat had bitten him, but the officers claimed that they could see no rat bites on Carlson's body, and ordered him to leave the rat alone. Carlson then tried to throw his coat over the rodent, and was arrested.

From an editorial in the Columbus, Ohio, Citizen-Journal:

"It's bad enough that Columbus has so many prostitutes....but -- pound for pound -- we must have some of the heaviest and homeliest hookers in the country."

Santa Gets Busted in Copenhagen

It is Copenhagen at Christmastime. You are shopping at one of the city's largest department stores. Suddenly, by some pre-arranged signal, 35 men and women dressed as Santa Claus emerge from the washrooms and descend on the store's book department. There, they start taking books down from the shelves and giving them to customers. One of them warmly wishes you a merry Christmas and presses several volumes on you. Giving generously, he says, is what Christmas is all about: Here, take these. What is this? A promotion gimmick? But then an alarmed store manager comes in and begins shouting. Customers are laughing, taking books with them. Suddenly masses of police arrive, and swiftly haul the generous Santas out into the street. There, the red-suited people are roughed up, searched and thrown into paddy wagons. Watching bystanders are horrified. Children become hysterical.

Make Mine a Broccoli Steak

A generation ago, vegetarians in the United States were a small and unfashionable minority. Today there are 10 million. Vegetarian restaurants, once curiosities, are now commonplace in most cities, and there are vegetarian societies in almost all parts of the country. Their ranks include big names like Cloris Leachman, Joanne Woodward, Paul Newman, Dick Gregory, and ex-Beatle George Harrison.

Vegetarians fall into three main categories: lacto-ovo-vegetarians, probably the most common, avoid all meat and fish but they use dairy products such as milk, cheese, and butter, along with eggs; total vegetarians exclude eggs, all cheeses (most cheeses are coagulated with animal rennet, an enzyme taken from a calf's stomach at the time of slaughter. For this reason, many lacto-ovo-vegetarians eat only cheese made with vegetable rennet); vegans (pronounced VEE-gans) avoid all products that in any way use animals, such as leather goods, and commercial cosmetics and soaps that contain animal fats.

Freezing to Death on the Equator

Twenty men froze to death on the equator beneath a brilliant tropical African sun.

In February 1908, Baron Egon von Kirchstein led a caraven of forty men in an attempt to conquer one of the world's mightiest volcanoes, the 14,500-foot-high Mount Karissimbi of the Virunga Range in Rwanda, Central Africa. The volcano straddles the equator.

They endured incredible cold for several days before they reached the Branca Crater, 12,000 feet above sea level. Here the howling of an icy wind suddenly increased to the fury of a tempest. It was high noon, but the cold grew intense in spite of a tropical sun blazing overhead. The wind and the mountainous terrain made the erection of tents impossible. Wearing sunglasses against the blinding glare, the members of the caravan huddled close together for warmth, for what seemed like an eternity.

The air grew more and more glacial until death began to still the chattering teeth of the sufferers. Around six o'clock in the afternoon the arctic wind abated and the survivors began a grim stocktaking. Fully half of the caravan lay dead on the icy ground still wearing their spectacles against the setting sun. Twenty men died between twelve noon and six p.m. on February 28, 1908, frozen to death under a blazing tropical sun.

Nolan Ryan: Strike-Out King

I liked the sound of it when I said it over slowly: Nolan Ryan Night. I knew that having a night dedicated to you is a special kind of thrill few ballplayers ever get to have; it has certainly been one of the most rewarding experiences in my career so far.

Everyone in Anaheim Stadium that night was given a ball-point pen with my autograph printed on it. The Angels' Booster Club gave me a trophy at home plate before the game, and also some gifts that I appreciated. But more important to me was what these honors meant. It's a very warm feeling to know that people think enough of you to dedicate a night to you.

In two seasons of pitching for the California Angels I had won 19 games and was moving toward winning 21 games in 1973. In my second season with them I pitched two no-hitters, which had been done only four times before in baseball history. I was about to set a new record of 383 batters struck out in a season. And I was a leading candidate for the Cy Young Award, which goes to the outstanding pitcher in the league each year. To me it was an even greater event when I thought about the times I had been ready to give up. There had been lots of those times.

The Cruise of the Dead

On September 22, 1860, the whaling schooner Hope, under command of Captain Brighton, was operating in the Southern Ocean south of Drake Straits when the towering walls of an ice barrier parted abruptly and revealed one of the strangest crafts ever seen on the seas. It was crusted with ice and snow, the yards and rigging dismantled and fallen, the sails in icy shreds, and the weather-worn hull was terribly battered and encrusted with ice.

It was a schooner which had just been released from the grip of the ice king. Captain Brighton boarded the strange craft and was startled to find a tragic stage setting with the players -- all perfectly preserved -- sitting like frozen statues in various natural attitudes. There was the corpse of the captain seated in a chair, leaning backward, with a pen still in its hand and the open logbook before it. A perusal of the log identified the ship as the Jenny and the last port of call as Lima, Peru. It revealed the fact that the Jenny was caught in the ice jam on January 17, 1823, and that the cruise of the dead had lasted thirty seven years.

The last line on the open logbook before the hand of the dead captain was as follows:

"May 4, 1823.....no food for seventy-one days. I am the only one alive."

The dead bodies of seven of the Jenny's crew and the corpses of a woman and a dog were all that were found on board. Captain Brighton removed the log and upon his return to England deposited it with the British Admiralty.

Ol' Diz Makes a Comeback

In the mid-1930s, Dizzy Dean was one of the greatest pitchers baseball had ever seen. But by 1938, he was through. The St. Louis Cardinals, for whom he had had his biggest years, had traded him to the Chicago Cubs. The Cubs used him sparingly in 1938, just enough to help them win the pennant, but he was pitching with his heart and his head. His fast ball was gone.

Dean struggled through two more seasons with the Cubs, then suffered the humiliation of being sent down to the minor leagues. The best he could do with Tulsa in the Texas League was to break even, winning eight and losing eight.

This was the final confirmation. Even Dean was forced to admit that he was through, and when the St. Louis Browns asked him to become their radio broadcaster in 1941, Dean accepted gladly. Talking had always been one of his strong points, but he usually talked about himself.

Talking about others was the unnatural part of baseball broadcasting for Dean, but in his unique way he learned to keep his listeners entertained. His grammar was so bad, however, that school teachers complained about his broadcasts. They said that he was a bad influence on their students. Although his use of the English language never improved, Dean did make himself valuable to the Browns, who were consistently the worst team in the American League.

$25,000 for a Drink of Water

This transaction took place under particularly tragic circumstances. A camel caravan laden with a rich cargo of silk, spices, ivory, and indigo was ambushed by a band of Tuareg desert robbers in the grimmest part of the Sahara between Sudan and Algeria. The section is known as the Erg, the Desert of Thirst and Death, where there are fine shifting sands, tall dunes, and a total absence of water and vegetation. The cargo and the camels were abducted by the robbers and the members of the caravan slain.

Only two escaped. They were the owner, a rich merchant named Hamed Ibn-el-Hatib, and a humble camel driver named Hakkiya. They had stepped out to recite their evening prayers and escaped the slaughter. It was well known to Hakkiya that Hamed wore a money belt containing 10,000 ten-franc gold pieces (about $25,000).

The attack had occurred in the month of August, and under the fiercely broiling sun the water gourds of the two wanderers were soon empty. There was only one mouthful of water left between them and that was in Hakkiya's gourd. The feverish brain of the merchant conceived a plan to slay Hakkiya for his water, but the camel driver was on his guard and in better physical condition.

It was the driver's turn to make a fantastic suggestion. "The life of one of us may be saved by a mouthful of water," he told Ibn-el-Hatib. "If you survive I'll expect you to take care of my family. But," he added, "I'll not part with my water for nothing. I'll swap it for the contents of your money belt."

"If I survive," thought the merchant, "I'll easily retrieve the gold from the dead driver." He removed his belt and wordlessly handed it to Hakkiya. But the latter shook his head.

"I want your scrip," he went on. He handed the merchant a large lead pencil

and tore half of a manila sheet he had been scribbling on.

He dictated: "I traded the full contents of my money belt for the water gourd of Hakkiya. Signed, Hamed Ibn-el-Hatib."

The water -- the most costly swallow on record -- changed hands. They resumed their plodding way. Death overtook them when they were only one thousand feet from the oasis of Azouatan. They were found several days later. The money and scrip were turned over to Hakkiya's widow.

Present -- But Not Voting

Though dead for nearly a hundred years, the dressed-up skeleton of Jeremy Bentham, with his head between his feet, sits in uncanny silence at the head of the hospital board around which the trustees of the University College Hospital in London gather. Jeremy Bentham founded this hospital in 1827 and presided at the first meetings of the Board of Trustees -- and he still does to this day, although he died in 1832. Each meeting of the board has found his weird figure at the table. His gaunt form is erect, his sightless eyes stare outright, and his broad-brimmed beaver hat is never removed from the long locks that dangle down on his shoulders, nor is his gloved hand ever taken from the cane that it has rested upon for over one hundred years. And as the various important bits of business come before the board, old Jeremy is consulted -- and when no answer comes from his grinning teeth -- he is recorded as: "Present -- But Not Voting"

This dressed-up bag of bones and dust of what was Jeremy Bentham sits at this board because the living Jeremy Bentham willed it so.

When Bentham died he left his whole fortune to the University College Hospital, but on the condition that his skeleton be preserved and placed in the President's chair at every board meeting. This unusual testament has been faithfully obeyed by the generations of trustees that have followed; and Jeremy still sits in the President's chair.

Jeremy Bentham was a child prodigy. He could speak Latin, Greek, French and English at the age of five. Matriculating at Queens College, Oxford, when only thirteen, he won his B.A. two years later and set out upon an eventful career that was to bring him fame and fortune as a writer, scientist, and philosopher.

His first work was entitled Fragments on Government, which was acclaimed as a masterly attack upon Blackstone's eulogies of the British governmental system.

Fame followed fast and the young scholar was soon taken up by the intelligentsia of his day, and his works commanded attention not only in England, but on the Continent and in America.

Although he traveled widely and led an eventful life, it seems that melancholy overtook him in the twilight of his life -- he was alone and without a family -- and it was then, evidently, that the thought of self-perpetuation came upon him, and the idea of always being present at the meetings of the College that he founded took definite course in his will.

It was in accordance with this last weird flare of his genius that his testament demanded that his head be severed from his body in the presence of his friends and placed in a separate glass case which now rests between his ankles, while a mask, a life-like replica of his living face, be placed upon his shoulders instead.

And so he has sat for nearly a hundred years -- always present -- but not voting.

The Daring Escapade of 1916

Sixty-one years ago, on the Fourth of July in 1916, 22-year-old Adeline Van Buren and her 24-year-old sister Augusta mounted their motorcycles, adjusted their goggles, and roared off in a cloud of dust from the Sheepshead Bay racetrack in Brooklyn, New York.

Sixty days later, having made headlines all the way, they chugged into San Francisco, completing the first transcontinental motorcycle trip ever made by what the newspapers then still called the gentle sex.

The purpose of the trip, the Van Buren women told the press, was to prove that women could be counted on to help in the National Preparedness effort, and that if the United States became involved in World War I, Uncle Sam would know that not only his nephews but also his nieces could serve as motorcycle scouts and dispatch riders.

The odyssey took them -- with side trips -- some 5,500 miles. On one side trip they zoomed up the winding, and in those days, treacherous, summit road on Pike's Peak, a two-and-a half-mile climb that had never been driven before by any woman in any kind of motorized vehicle. Although there were no disasters, they did get lost in the desert about a hundred miles west of Salt Lake, and their canteens ran dry. Luckily, a prospector happened by with a tank wagon and he pointed them back to the trail. The roughest conditions of the sisters' trip were encountered in the Colorado mountains during cloudbursts, on the deep sand and rocky washout trails between Denver and Salt Lake City, and in the muddy ruts when the rains came as they cycled across Kansas and Nebraska. Augusta was so small that when she was "in the saddle" she could barely touch the ground with the tip of her toe. And several times, Adeline said, they'd fall asleep while riding in those ruts, and simply fall off their machines. They were arrested a half-dozen times, too, in small towns between Chicago and the Rockies -- for wearing men's clothes -- but each time they were released

with only a reprimand, provided they got out of town fast.

None the worse for wear, and with frequent long stopovers as guests of tire-and-motorcycle distributors along the way, they arrived bright and beaming on the West Coast on September 2, proclaiming "Woman can, if she will!"

And the bottom line of their trip? When the United States joined the war a year later, Adeline volunteered for the Army and was rejected, so she returned to her job as an English teacher. Augusta became a correspondent in a business school, but took up flying next, continuing that until she was well into her sixties.

The Dog That Made A Box Score

A large Cuban baseball player named Roberto Gonzalo Ortiz appeared in Charlotte, North Carolina, in 1941, to play baseball for the Charlotte Hornets in the Piedmont League. Ortiz loved to play baseball and the Washington Senators, who owned his contract, thought he played very well. He came as a pitcher who had burning speed, but little control. When he started to play for the Hornets, he was switched to the outfield, where his strong arm would command respect of base runners.

Because Ortiz could barely speak English, he found himself alone in Charlotte except for one Cuban friend and a small dog, who was the color of cooked squash. The Cuban boy was shy but animals loved him, especially his homeless mongrel dog. When the team worked out, the yellow dog romped along with Ortiz. When the team went into the clubhouse, he seemed to wait especially for Ortiz to come out. When the team played, the yellow dog seemed to know that his place was out of the way.

Another thing the dog seemed to know was baseball. The excitement in the stands created when the Charlotte team would work up a rally excited him, too. Often the groundskeeper would be forced to chase him out of the park.

One Sunday afternoon, though, while the yellow dog was enjoying the freedom of the park, he completely forgot himself. Out of it he emerged as one of the most famous dogs in baseball lore.

The Charlotte team went to bat in the last of the ninth inning trailing by one run, apparently the victim of a tough pitcher. But the pitcher lost his control momentarily, and walked a Hornet batter. The next batter was Roberto Ortiz.

The big Cuban got a pitch that he liked and lashed into it. As he hit the ball, the crowd leaped to its feet with a roar. This aroused the yellow dog, who was sleeping in the dirt under the first-base bleachers. The ball had gotten

by the center fielder and a run was scoring, tying the game. Ortiz would be trying for every base he could get.

As the Cuban neared first, he was joined by a sudden blur. The yellow dog, catching sight of his friend, had burst through the open clubhouse gate and was off to join him. Down to second base they went, the big Cuban and the little dog, running like a team. Then around second base, past the shortstop, whom the dog barely missed while making his wide turn.

The throw was coming in from the outfield now and Ortiz was in danger as he neared third. The coach signaled for him to slide and as Ortiz slid, the yellow dog slid, too. The umpire's hands signaled safe. Both Ortiz and his dog had made it.

Your Tax Dollars at Work

The State Legislature of Maine has set aside the first day of winter as an annual holiday to honor Chester Greenwood, who invented earmuffs.

The Oregon State House of Representatives has acted to make the Sasquatch, or "Bigfoot," a protected species.

The lower House of the Iowa State legislature has declared the state flower of Kansas, the sunflower, a noxious weed. Seven years ago, when similar legislation was proposed in Iowa, Kansas introduced a bill to declare the state bird of Iowa, the goldfinch, a public nuisance. This year Kansas has not yet been heard from.

Massachusetts has had to modify its state gun control laws so that persons convicted of carrying unregistered BB guns will not get an automatic one-year jail sentence.

A bill to forbid the sale of candy containing liquor to minors has been introduced in the California state assembly by Assemblywoman Leona Egeland (D-San Jose), who stated, during debate, that, "My seven-year-old with her 50 cents allowance could go down to the store and buy two Babarums, ride her bicycle in traffic, go to the playground, do other childish things, and not be in total control."

The U.S. Law Enforcement Assistance Administration commissioned a prototype police patrol car of the future which contains $49,000 worth of electronic equipment, including a micro-computer whose readout tells the driver, among other things, whether the siren is on.

The U.S. Forest Service is doing design research on a solar-powered outhouse.

A recent Labor Department Occupational Safety and Health Administration farm safety pamphlet contained the following two passages: "Hazards are one of the main causes of accidents. A hazard is anything that is dangerous." And, "Be careful that you do not fall into the manure pits."

A California county recently applied to the Commerce Department for $1 million in public works funds to build a swimming pool. The county had previously received $7 million in drought relief aid.

APPENDIX B

INSTRUCTIONAL MATERIAL-PHASE I
(Morphology & Syntax)

Project #710740
January 19, 1978

— A A A A A

— T A T T A A T T

— R T R R T A R R T

— E E E E E

— A T R E A A T R

— A ARE REAR RATE

— A RAT ATE TEA

— a a a a a

— t a t t a t t

— r r t a t r r a t t

— e e t a t e e r r e

— a t t a a e e r e r r a

— tear are rat

— A rat ate a treat

— E a t r r R A T E e r e R

— at rat Rate eat

— tar a ar Treat

— Art ate a rare treat

— T R A T E E R R T E

— t r a e e t r a t

— Rate Tar ear

— A A R T T E T E A R

— t a a r r e a r t t

— rat Art rate

— I I I I I

— H H I H I I H

— O H H I O H O I

— S O S H I O S O

— I E O R A H T S R E A I

— AT IT OH SO TO

— HIS THE HAS SEE

— HOSE TREE TOSS THIS

— TREAT SOARS HORSE THREE

— I SEE THREE HORSES

— HIS HORSE EATS

— SHE ATE HOT TOAST

—— i i i i i i

—— n h h h i h i i

—— o o o h i o h o h i

—— s h s s o i s o s o o

—— e o r a h s t e i o

—— hi or to as

—— hit sat tot

—— tote hate rate that

—— short those tease shoot

—— HE HATES RATS

—— IT IS TOO HOT HERE

—— THOSE HORSES ARE NOT HERE

—— SHE IS TOO SHORT

—— S s H h I i O s H o S h o i H

—— his IS Ohio soot threat

—— Has shoot heat Sheet Those

—— Those three trees

—— Ohio has no heat

—— She treats those sheets here

— A B C D E C G K L M F H I J D

— N K N O P Q L I J R S G T T U

— Q V W N M B X Y Z S I U P W R

— a b k l z b q

— c d f g p i w

— e h j k l m p

— n o p z e r s g c t

— u f q v i b w d n m

— x i l y f z

— to am an in is

— and are for not now

— call show said step tape

— small green could every first

— She called him for a letter

— First he liked her

— Then she liked him

— The Pretty girls went to the party

— The Ugly girls stayed home

— Ken reads well but he cannot sing

STAGE I

WORD MARKERS

A. Noun Markers

a	an	few	one	the
same	any	this	my	

1. a - examples

a sack	a train	a factory
a bell	a cape	a daisy
a thumb	a herd	a ship
a pear		

Supply 5 examples of nouns following the noun marker a

a _____ a _____

a _____ a _____

a _____

2. an - usually the following word begins with a vowel sound

an acorn	an egg	an inch
an honor	an office	an eagle
an apron	an uncle	an umbrella
an arrow		

Supply 5 examples of nouns following the noun marker an

an _____ an _____

an _____ an _____

an _____

3. few - usually means following noun will be plural

few planes	few acorns	few bears
few candles	few tickets	few men
few cowards	few guards	few women
few mice		

Supply 5 examples of nouns following the noun marker few

few _____ few _____

few _____ few _____

few _____

4. one - (any number - two, three, four, etc.)

one bed	one part	one singer
one alarm	one bug	one cousin
one factory	one orange	one pupil
one town		

Supply 5 examples of nouns following the noun marker one

one _____ one _____

one _____ one _____

one _____

5. the - the following noun may be singular or plural

the attack	the barber	the car
the pumpkin	the toast	the carrot
the children	the fans	the dentist
the letter		

Supply 5 examples of nouns following the noun marker the

the _____	the _____
the _____	the _____
the _____	

6. some - usually designates a part of

some Americans	some carrots	some water
some shade	some people	some cotton
some women	some butter	some workers
some paper		

Supply 5 examples of nouns following the noun marker some

some _____	some _____
some _____	some _____
some _____	

7. any

any adventure	any youth	any brother
any fact	any government	any person
any banker	any card	any danger
any Friday		

Supply 5 examples of nouns following the noun marker any

any _____ any _____

any _____ any _____

any _____

8. this

this battle	this child	this hymn
this lion	this Monday	this artist
this guy	this cake	this order
this whale		

Supply 5 examples of nouns following the noun marker this

this _____ this _____

this _____ this _____

this _____

9. my

my business	my car	my kitchen
my dentist	my sweater	my English
my mug	my dress	my teacher
my wife		

Supply 5 examples of nouns following the noun marker my

my _____ my _____

my _____ my _____

my _____

B. Verb Markers

am	are	is	was
have	can	were	

1. am

am listening	am beginning	am giving
am meeting	am dancing	am baking
am recording	am coming	am visiting
am washing		

Supply 5 examples of verbs following the verb marker am

am _____ am _____

am _____ am _____

am _____

2. are

are winning	are aiding	are playing
are turning	are reading	are living
are suffering	are becoming	are weeping
are mixing		

Supply 5 examples of verbs following the verb marker are

are _____ are _____

are _____ are _____

are _____

3. is

is asked	is inviting	is ordering
is trading	is behaving	is learned
is beginning	is joining	is praising
is taught		

Supply 5 examples of verbs following the verb marker is

is _____ is _____

is _____ is _____

is _____

4. was

was answering	was calling	was described
was beating	was failed	was being asked
was hunting	was written	was grown
was picked		

Supply 5 examples of verbs following the verb marker was

was _____ was _____

was _____ was _____

was _____

5. have

have baked	have blamed	have cashed
have crushed	have stopped	have been baking
have been blaming	have been cashing	have been crushing
have been stopping		

Supply 5 examples of verbs following the verb marker have

have _____ have _____

have _____ have _____

have _____

6. can

can toss	can ask	can bark
can beat	can care	can drink
can direct	can fly	can promise
can punch		

Supply 5 examples of verbs following the verb marker can

can _____ can _____

can _____ can _____

can _____

7. <u>were</u>

were tiring	were pushed	were raced
were picking	were mixed	were met
were oiled	were circled	were dancing
were chased		

Supply 5 examples of verbs following the verb marker <u>were</u>

were _____ were _____

were _____ were _____

were _____

C. Phrase Markers

up	down	in
out	for	after

1. up - usually followed by noun marker and noun

up the tree	up the creek	up the stairs
up the ladder	up the street	up on the roof
up on the shelf	up on the table	up on the wall
up on the blackboard		

Supply 5 examples of noun markers and nouns following the phrase marker up

up _____ up _____

up _____ up _____

up _____

2. down

down the street	down the hill	down the stairs
down the ladder	down the river	down the tree
down the drain	down the hatch	down the road
down the wall		

Supply 5 examples of noun markers and nouns following the phrase marker down

down _____ down _____

down _____ down _____

down _____

3. in

in town	in the country	in the beginning
in the box	in the back	in the Spring
in the bath	in the class	in the hut
in the cave		

Supply 5 examples of noun markers and nouns following the phrase marker in

in _____ in _____

in _____ in _____

in _____

4. out

out the door	out the window	out the back
out the side	out the exit	out of the car
out of the house	out of the bath	out of the yard
out of the book		

Supply 5 examples of noun markers and nouns following the phrase marker out

out _____ out _____

out _____ out _____

out _____

5. for

for the banker	for the horse	for the bear
for the pet	for the pair	for battle
for today	for bed	for yourself
for him		

Supply 5 examples of noun markers and nouns following the phrase marker for

for _____ for _____

for _____ for _____

for _____

6. after

after supper	after vacation	after work
after school	after shopping	after the lesson
after the race	after the show	after the punch
after the game		

Supply 5 examples of noun markers and nouns following the phrase marker after

after _____ after _____

after _____ after _____

after _____

WORD CLASS

Noun Verb Adjective Adverb

A. Noun - name of a person, place, or a thing

plane	barn	town
Joyce	horse	kitchen

Supply 5 examples of nouns

_____ _____

_____ _____

_____

B. Verb - shows action or state of being

cross	bathe	drink
be	hit	grow

Supply 5 examples of verbs

_____ _____

_____ _____

_____

C. Adjective - qualifies, limits, or defines a noun

one (two, three, etc.)	ugly	all
some	red	many

Supply 5 examples of adjectives

_____ _____

_____ _____

_____

D. Adverb - modifies a verb, adjective or another adverb

not	well	here
quickly	softly	

Supply 5 examples of adverbs

_____ _____

_____ _____

_____

SUFFIXES

A. The following suffixes are often used with verbs

Suffix	Meaning	Examples
- ed	action is past	acted
- d (t)	action is past	puzzled
- en	action is past	chosen
- ing	action is continuing	running
- s	third person action	has
- es	third person action	teaches
- er, - or	agents of action	teacher/doctor
- ance	state of action	performance
- ation	state of action	representation
- ment	result of action	excitement
- able, - ible	able of action	lovable/edible
- ent	agents of action	student
- ful	full of action	playful

B. The following suffixes are often used with nouns

Suffix	Meaning	Examples
- s	more than one	boys
- es	more than one	dishes
- ship	relating to	friendship
- al	relating to	fictional
- etic	associated with	magnetic
- ful	full of	cupful
- less	without	penniless
- ize	to make	computerize
- ly (adv)	characteristic of	fatherly
- fy	to make	intensify
- 's	possessive	Ivan's

C. The following suffixes are often used with adjectives

Suffix	Meaning	Examples
- er	comparison	faster
- est	comparison	meanest
- ly	characteristic of	coldly
- ness	characteristic of	sadness

D. Suffixes often used

ward	direction	toward

SUFFIXES - A. Verbs

1. The following suffixes are often used with verbs

-ed	-d (t)
asked	moved
waited	named
stopped	loved

Fill in the missing part

smoke _____ jump _____

start _____ line _____

2. The following suffixes are often used with verbs

-es	-s	-ing
teaches	reads	swimming
punches	likes	writting
misses	leads	racing

Fill in the missing part

learn _____ _____ part _____ _____

catch _____ _____ accept _____ _____

creep _____ _____ reach _____ _____

3. The following suffixes are often used with verbs

-er	-or	-ent
teacher	dictator	student
reader	govenor	resident
swimmer	conductor	president

Fill in the missing part

beginn_____ credit_____

elevat_____ oppon_____

build_____ exhibit_____

4. The following suffixes are often used with verbs

-ance	-ation
avoidance	representation
resistance	translation
importance	realization

Fill in the missing part

affili_____ perform_____

guid_____ inclin_____

preserv_____ accept_____

5. The following suffixes are often used with verbs

-ment	-able (-ible)	-ful
containment	obtainable	careful
amazement	readable	hopeful
government	credible	successful

Fill in the missing part

select_____ suspense_____ _____

excit_____ commend_____ _____

establish_____ joy_____

SUFFIXES - B. Nouns

1. The following suffixes are often used with nouns

-s	-es	-'s
birds	brushes	Linda's
cars	boxes	Bruce's
horses	matches	Greg's

Fill in the missing part

Ken_____ noise_____

duck_____ boss_____

shirt_____ bush_____

2. The following suffixes are often used with nouns

-ship	-al	-ly
partnership	normal	manly
citizenship	fictional	friendly
township	natural	daily

Fill in the missing part

friend_____ _____ part_____

music_____ court_____

mother_____ direction_____

3. The following suffixes are often used with nouns

-ize	-fy
materialize	glorify
summarize	satisfy
finalize	purify

Fill in the missing part

ampli_____ patron_____

steril_____ idol_____

identi_____ quali_____

4. The following suffixes are often used with nouns

-ful	-less	-etic
meaningful	meaningless	energetic
graceful	childless	genetic
handful	painless	cosmetic

Fill in the missing part

diet_____ fear_____ _____

mind_____ _____ tear_____ _____

diab_____ state_____

SUFFIXES - C. Adjectives

1. The following suffixes are used with adjectives for comparison

-er	-est
smarter	smartest
stronger	strongest
happier	happiest

Fill in the missing part

weak_____ _____ loud_____ _____

clean_____ _____ cold_____ _____

high_____ _____ hard_____ _____

2. The following suffixes are generally used with adjectives to indicate a character

-ly	-ness
bravely	brightness
sadly	greatness
honestly	happiness

Fill in the missing part

strange _____ _____ lone_____

rude_____ _____ strong_____

smug_____ _____ weak_____ _____

3. The following suffix is often used with other words to denote direction

forward toward downward

Fill in the missing part

up_____ west_____

in_____ home_____

back_____ east_____

PREFIXES

A. The following prefixes are generally used to mean "not"

Prefix	Meaning	Examples
dis-	not	disagree
un-	not	unhappy
ir-	not	irregular
in-	not	informal
im-	not	impartial

B. The following prefixes are generally used to mean "together-with"

Prefix	Meaning	Examples
co-	together, with	cohabit
col-	together, with	collect
com-	together, with	combine
con-	together, with	connect

C. The following prefixes are generally used

Prefix	Meaning	Examples
mis-	wrong	mistake
pre-	before	prepare
post-	after	postpone
super-	over	supervisor
re-	back, again	return
ex-	out	exclude
en-, em-	include	enclose/embrace

1. The following prefixes are generally used to indicate a negation (not)

dis-	un-	in-
dislike	unpack	incorrect
discard	unlock	indefinite
discourage	unsnap	indirect

Fill in the missing part

_____grace	_____wrap
_____spoken	_____fidel
_____obey	_____mantle
_____finit	_____usual
_____own	_____secure

2. The following prefixes are generally used to indicate "together-with"

-com	con-
committee	conclude
compare	confidence
comply	conduct

Fill in the missing part

_____pose	_____fuse
_____verge	_____bine
_____munal	_____vene

3. The following are most often used

pre-	re-	mis-
precede	reread	mispell
predict	return	mistreat
prehistoric	recover	misfit

Fill in the missing part

_____fere	_____fortune
_____cess	_____pare
_____mature	_____lead
_____calculate	_____claim

4. The following are most often used

-em	en-	ex-
embody	encase	exclude
emboss	encounter	except
employ	enforce	exhale

Fill in the missing part

_____bargo	_____plode
_____gage	_____bitter
_____haust	_____pose
_____velope	_____roll

PREPOSITIONS

The following prepositions are most commonly used

of	in	to
of my life	in the Spring	to the store
of the paper	in his voice	to the country
of the farm	in the camp	to the party

for	at	from
for me	at four o'clock	from the party
for the dog	at the house	from the doctor
for next week	at the party	from Debbie

by	on	with
by the house	on the roof	with us
by the book	on the test	with the Optacon
by noon	on the farm	with Bruce

PREPOSITIONS

Phrasal Prepositions:

in spite of
in regard to
on account of
by means of
in addition to
in front of
on top of
in behalf of
on behalf of
in place of
as far as

Two Word Prepositions:

across from
due to
instead of
along with

Most Commonly Used Prepositions:

of
in
to
for
at
from
by
on
with

CONNECTIVES

Connectives usually connect similar structures such as two nouns, verbs, adjectives, adverbs, and phrases.

A. The following are the most commonly used:

and or but

1. and - in addition to

read and write

tables and chairs

pretty and smart

today and tomorrow

the boy and the girl

the big dog and the cat

He turned the key and the lock broke.

2. or - indicating choice

Josh or David

right or left

pretty or ugly

the beginning or the end

the dog or the cat

print or braille

3. but - indicating opposition

She left, but he waited.

I would love to go to the movie, but I do not have enough money.

It was nine p.m., but there was light in the sky.

CONNECTIVES

B. Fill in the missing part

1. Linda broke the cup _____ spilled the coffee.
2. He could not say if she was pretty _____ ugly.
3. The telephone rang, _____ no one answered.
4. Greg _____ Debbie went shopping.
5. He tried to read print, _____ he could not because he was blind.
6. What would you prefer, a dog _____ a cane?
7. Either Bruce _____ David broke the Optacon, _____ we do not know who did it.
8. Linda reads well in print _____ in braille.
9. Men _____ women are equal.
10. The ground was wet, _____ the grass did not grow.

SYLLABIFICATION

A. Monosyllabic words

1. Three letter words with one vowel sound

cab	hat	bad	van
rat	man	bus	mat
sun	bug	bat	gun

2. Four letter words with one vowel sound

bell	kiss	stop	tell
miss	flat	rust	eggs
rock	gust	raft	soft

3. More than four letter words with one vowel sound

stand	spring	through	plate
switch	brought	gripe	change
thought	drink	course	stretch

B. Compound words having two syllables

bellhop	bell + hop
cobweb	cob + web
pigpen	pig + pen
sunset	sun + set
gunman	gun + man
suntan	sun + tan

Dividing Words Into Syllables

B. Compound words having two syllables (continued).

Divide these words into syllables.

outbreak

meanwhile

overland

lighthouse

crossbow

godmother

C. Prefixes and Suffixes as syllables

1. A prefix may be used as a separate syllable. Divide between the root word and the prefix.

dis + agree	em + body
un + happy	ex + cept
co + habit	pre + dict
mis + take	in + direct
re + turn	com + bine

2. A suffix may be used as a separate syllable. Divide between the root word and the suffix.

act + ed	father + ly
chos + en	fiction + al
teach + es	boy + s
stud + ent	penni + less
play + ful	computer + ize

Divide these words according to the prefix and suffix rules.

agent	consume	faithful	enclose
contrite	about	badly	excitement

Rules for Dividing Words Into Syllables

1. In a compound word, divide between the words.

   Example: limestone lime + stone

2. When double consonants appear, divide between those consonants.

   Example: pattern pat + tern

3. Divide between a root word and prefixes and suffixes.

   Example: incompleted in + complet + ed

4. Divide between two different consonant sounds when they come between two sounded vowels.

   Example: admire ad + mire

   magnet mag + net

5. When the consonant comes between two sounded vowels, divide after the first vowel.

   Example: vital vi + tal

   notice no + tice

6. When the consonant comes between two sounded vowels and the first vowel is short, divide after the consonant.

   Example: topic top + ic

   fixing fix + ing

   There are exceptions to this rule.

7. Blends and speech sounds are considered as a single consonant and should not be divided.

   Example: peaches ch is one sound

8. Divide before a consonant that has <u>le</u> immediately following it.

   Example: table ta + ble

   candle can + dle

9. When two vowels have a different sound, divide between each.

   Example: diary di + ary

   dial di + al

1. When double consonants appear, divide between those consonants. Divide these words into syllables.

correct	saddle
mammal	scanning
current	potter

2. Divide between two different consonant sounds when they come between two sounded vowels. Divide these words into syllables.

symbol	reptile
faction	budget
signal	admit

3. When the consonant comes between two sounded vowels, divide after the first vowel. Divide these words into syllables.

about	notify
process	vitamin
radio	vocal

4. When the consonant comes between two sounded vowels and the first vowel is short, divide after the consonant. Divide these words into syllables.

magic	bodice
toxic	legend
mixing	talent

5. Blends and speech sounds are considered as a single consonant and should not be divided. Divide these words into syllables.

watching	rhythm
machine	healthy
quickest	distinguish

6. Divide before a consonant that has <u>le</u> immediately following it. Divide these words into syllables.

twinkle	miracle	fable
castle	cradle	principle

7. When two vowels have a different sound, divide between each.

Divide these words into syllables.

radio	radius
radium	diagonal
fiery	diet

SENTENCE PATTERNS

The following are considered to be the basic sentence patterns in the English language.

A. Noun Phrase + Verb Intransitive (+Adjective or Adverb)

A noun phrase includes: noun marker + adjective + noun
personal pronouns and proper names
noun marker + noun
noun marker + adjective + noun
personal pronoun
personal pronoun + adverb
proper names

An intransitive verb is <u>not</u> followed by a noun phrase (direct object).

1. Noun Phrase + Verb Intransitive

examples: The children played. The happy children played.
The dog barked. The hungry dog barked.
The snow melted. George skated.
I happily agreed.

Make the following sentences complete.

Some birds _____. An eagle _____.
A few _____ swim. A beautiful moon _____.
This boy _____. My new _____ tore.
The adventurous _____ died. We _____.
Debbie _____. One _____ fell.

2. Noun Phrase + Verb Intransitive + Adjective

examples: The flowers look beautiful. Some hamburgers taste good.

The snow looks dirty. This fur feels soft.

Few drinks taste bad. He seems jumpy.

Make the following sentences complete.

Holly seems _____. The car _____ new.

The cloth _____ rough. Her sister looks _____.

She _____ tired. That steak _____ burnt.

Her cooking _____ bad. Bruce seems _____.

3. Noun Phrase + Verb Intransitive + Adverb

examples: The girl ran home. The professor speaks softly.

He speaks quickly. They read easily.

The children dance well. We stopped immediately.

Make the following sentences complete.

The man _____ harshly. The frog jumped _____.

The woman walks _____. The Optacon _____ yesterday.

_____ sat carlessly. The campers _____ in the forest.

B. Noun Phrase + Verb Transitive + Noun Phrase (+Adjective or Adverb or Noun Phrase)

A verb transitive is followed by a noun phrase (direct object).

1. Noun Phrase + Verb Transitive + Noun Phrase

example: The hungry dog ate the food. Bruce washed the clothes.

Linda fed Brian. Debbie cleaned the house.

Three of the children jumped the hurdle.

The bus boy cleaned the table.

Make the following sentences complete.

They all _____ the book. Duane _____ the computer.

The students attended the _____.

The bus driver called the _____.

The teacher _____ the noisy children.

A dog chased a _____.

2. Noun Phrase + Verb Transitive + Noun Phrase + Adjective

examples: He painted the door white. Bruce drew Duane ugly.

The theives painted the car blue.

He dyed his shirts green.

He painted the landscape pretty.

We painted the room purple.

Make the following sentences complete.

The mothers _____ the schoolroom green.

The floor was _____ blue.

We _____ the clothes pink.

They painted the house _____.

He wiped the table _____.

The children _____ the puppy brown.

3. Noun Phrase + Verb Transitive + Noun Phrase + Adverb

examples: David buys food in the store.

Brian drank the milk hungrily.

The robbers opened the door forcefully.

Duane ran the dog in the park.

Marge sent the card on Valentine's Day.

Bruce broke the cane tip yesterday.

Make the following sentences complete.

Bruce _____ the washer in the basement.

They _____ the animals at the zoo.

The grandchildren visited them _____.

Debbie dropped the trash on the _____.

Ken _____ the door softly.

The park rangers _____ the hippopotamus effortlessly.

4. Noun Phrase + Verb Transitive + Noun Phrase + Noun Phrase

examples: Linda gave the baby a bottle.

Holly wrote her friend a letter.

Grey sent Marge a birthday gift.

Duane bought Sally a bone.

Ken told the children a story.

Debbie renamed the dog Heather.

Make the following sentences complete.

We sent the children _____.

The Smith's left the waitress a _____.

Debbie gave the _____ the money.

The team left the losers the _____.

The parents gave the children _____.

The landlord showed _____ the apartment.

C. Noun Phrase + Linking Verb (+be) + Noun Phrase or (Adjective or Adverb)

A linking verb (be) connects a noun phrase with another phrase.

1. Noun Phrase + Linking Verb (be) + Noun Phrase

examples: The three students are close friends.

His pet is a guinea pig.

Bruce is a computer programmer.

This man is a policeman.

The raid was a surprise.

This beautiful girl is a secretary.

Make the following sentences complete.

The dog is my _____.

The man in the white _____ is a nurse.

My friend John _____ a runner.

Some blind people _____ Optacon readers.

The girls _____ sisters.

Duane's dog is a _____.

2. Noun Phrase + Linking Verb + Adjective

examples: Patty's dog is beautiful.

Brian is hungry.

The teacher is mean.

The woman is thoughtless.

The hamburgers are cold.

Bruce is talkative.

Make the following sentences complete.

The winters in Ohio are _____.

The cane tip _____ broken.

Her sister _____ ugly.

Optacon readers are _____.

The table _____ too high.

The wild animals are _____.

3. Noun Phrase + Linging Verb + Adverb

examples: The Optacon is on the table.

The dancers are on the stage.

The carollers are outside.

The baby is in the playpen.

The machine is here.

The Optacon training is at the Vision Center.

Make the following sentences complete.

The money _____ in the account.

Most students are _____.

Some people _____ thirsty.

The six children _____ in the car.

The dog is _____.

Our food _____ tasty.

4. Noun Phrase + Linking Verb + Noun Phrase + Adverb

examples: She was the girl in the car.

Mr. Dithers is a doctor in Ohio.

The lesson is sentence patterns in this phase.

Linda is the receptionist in this office.

He is a master of ceremonies for the program.

They are the bus drivers in the city.

Make the following sentences complete.

David _____ a participant in the project.

The tiger _____ an animal in the _____.

Columbus is a _____ in the midwest.

Sunday is the first day in the _____.

He is the _____ in the corporation.

They _____ the winners last year.

PRE-CLOZE PROCEDURE

1. The candidate's speech was very convincing.

   He gave a very convinc--- speech.

   The speech was well written but not con-------.

2. His letter to the department was illegible.

   He always seems to write in such illeg---- print.

   The il------- note was found in the bottle.

3. You must preheat the oven before baking.

   He always seems to forget to pre---- the oven.

4. The students seem to disagree with the professor.

   The students and the professor always dis-----.

5. The stranger felt the town was unfriendly.

   The unfriend-- town gave no welcome to the stranger.

   The stranger left the un-------- town for the country.

6. The valuable vase was irreplaceable.

   The irreplac----- vase was broken.

   The vase was not ir----------.

7. The usher insisted that we leave the theatre.

   The grandparents insist--, so the children stayed.

   He in------ on seeing the bill.

8. A judge's obligation is to be impartial.

   She seemed to be impar---- in the choice.

   The referee was im------- throughout the game.

9. Cooperation is essential for the team's success.
   The survival of the squad depended upon coopera----.
   The key to success in any company is co---------.

10. Some people have a stamp collection.
    His collec---- of coins disappeared.
    Her jewelry co-------- was stolen.

11. Do not combine all the ingredients.
    When you com---- the basic ingredients for the cake, you're almost finished.

12. His acceptance of the new job was a mistake.
    She prided herself in never having made a major mis----.

13. Before you leave, make sure to prepare the materials.
    Do not pre---- too much food for lunch.

14. What is the amount of postage due?
    The post--- is $1.25.

15. The new superintendent is a woman.
    The superintend--- is in a meeting.
    A new super--------- has not been hired yet.

16. He resubmitted the story, but has heard no answer.
    She resubmit--- the job application.
    Please resub--- the withdrawal forms.
    He re--------- his name for a promotion.

17. His son was expelled from his fifth high school.
    He had been expell-- in the past.
    She seemed too big to be ex------ from class.

18. The trainer built a new enclosed area for the dogs.
    The enclos-- area was much too large.
    The en------ area was not familiar to the dogs.

19. The two friends embraced on the street.
    The way they embrac--, they seemed to be old friends.
    She and her boyfriend em------ openly.

20. The employees were planning to protest the working conditions.
    Those employee- are being reassigned.
    The two employ--- left early.
    The manager said em------- could no longer leave early on Friday.

21. The fifth grader won the award for good citizenship.
    The citizen---- class was redesigned.
    His family was noted for their good citi-------.

22. Staying with his grandparents was a natural way of life for the young man.
    His grandpar---- brought him candy.
    They became grand------- yesterday.

23. At fifteen, John became a diabetic.
    The diabe--- tried to eat a candy bar.
    Being a di------ is fairly common today.

24. He left the basketful of puppies on the doorstep.
    She picked a basket--- of apples.

25. They were able to computerize the formulas.
    Many things are comput------ today.
    The data was com---------.

26. The teacher has a motherly attitude toward her students.
    The mother-- teacher often baked cookies.

27. The proposed solution only intensified the problem.
    Her resistance intensifi-- with his insistance.
    The flames were in--------- with the new wood.

28. The older child is much heavier.
    The heav--- child is not always old--.

29. Old Mister Jones was the meanest man in town.
    The mean--- man in town scared all the little kids.

30. He stared at her sadly.
    The two sisters parted sad--.

31. He was amazed at her friendliness.
    As she got to know him, her friendli---- began to disappear.
    The friend------ of the town was a pretense.

32. The stranger went toward the empty house.
    He went to---- the vision center.

33. The reader was very tired after only half an hour.
    Most of all, he wanted to be a good read--.

34. A new president was elected last week.
    No woman has ever been the company's pres-----.

35. The chairman stressed the importance of the rules.
    People forget the import---- of seat belts.
    The im-------- of the project was underestimated.

36. The translation was incomplete.
    His transla---- was perfect.
    Where can I find a trans------ of this book.

37. The materials were not readable.
    At this time, no read---- materials are available.

38. She seemed to glorify him after he left.
    The town glori---- the major.

APPENDIX F

PRE-CLOZE PRACTICE READING PASSAGES

The First Book of Music

The inven--- of the phono---, the radio, and tel--- has brought music into everybody's home. Today more peo--- can hear and enjoy good mus--- than ever before in his---. Chil--- like mus--- as a hobby, for danc--- and entertain---. Grown--- take pleasure in listen--- to fine mus--- at con---. Through--- the world peo--- of every reli--- use mus--- in connec--- with prayer.

In recent years mus--- has even been play--- in hos--- to help peo--- get well. This idea, you see, goes back to the medi--- man among primi--- tribes. Next time you hap--- to feel ti--- or out of sorts, try listen--- on the pno--- or ra--- to a piece you enjoy. The chances are you will feel bet---.

The First Book of Music

No--- knows how music first began. Some say it start--- with sing---. Others say it start--- with beat--- time. Did you ever notice how some people shake their heads or tap their feet in time with music when they lis---? The rhythm is what most people notice when they first hear a piece of music. Babies bob their heads and kick their feet to music even before they learn to speak.

The earli--- music was not made to give pleasure. It had definite uses. It was an accompani--- to prayer and many other activi---. When tribe fought tribe, war chants urg--- men on to battle. Savage howls and the beat--- of drums warn--- of an enemy's approach. Gradual---, over many thousands of years, songs and chants be--- to be used in daily life -- for planting, harvest---, hunting; for love and for wed---; for heal--- the sick; for all sorts of celebra---.

Today there are still primitive tribes who use music in much the same way as people did in very early times. Among the Afri--- natives, for instance, or the Indian tribes of the Uni--- States, there are special songs and chants for certain occa---. When some--- gets sick, the medi--- man must sing the right song while he gives the patient medi---. You might think it fun--- if the doc--- sang a special song while he was vaccina--- you.

The First Book of Music

The inven--- of the phono---, the radio, and tel--- has brought music into everybody's home. Today more peo--- can hear and enjoy good mus--- than ever before in his---. Chil--- like mus--- as a hobby, for danc--- and entertain---. Grown--- take pleasure in listen--- to fine mus--- at con---. Through--- the world peo--- of every reli--- use mus--- in connec--- with prayer.

In recent years mus--- has even been play--- in hos--- to help peo--- get well. This idea, you see, goes back to the medi--- man among primi--- tribes. Next time you hap--- to feel ti--- or out of sorts, try listen--- on the pno--- or ra--- to a piece you enjoy. The chances are you will feel bet---.

The First Book of Music

Today, almost every--- enjoys music whether he sings, plays, or just lis--- for pleasure. Music has always been one of the best-lov--- arts. It is popular in the home as well as social--- -- at concerts, church, the theater, and dan---. During the past thirty years, great chang--- have occur--- to make music more popular than ever.

When the phono--- was inven--- people were able to hear music on records for the first time in history. Then came radio and tele---. Huge numb--- of people can now enjoy fine music simply by turn--- a knob.

But the art of music is not a recent inven---. Like the other arts, it has a very long and interest--- history. How old music is, nobody can say. Its begin--- reach far back to those ancient days when man was still a savage.

The Great Wonder - The Motor Car

In its infancy -- in the 1890's -- the automo--- seemed not to have much of a future. Car-mak--- competed fierce--- for the hand--- of custom--- who were able to afford their expensive custom-made machin---. To settle their arguments as to the qual--- of their respective products, races were arrang--- which eventual--- gave a big lift to the budding sport. The "horse--- carriage" stood up remarkab--- well to stress and strain as it whizz--- past breath--- crowds at the unheard-of speed of fifteen miles an hour.

Cross-country tours prov--- the durabi--- of machin--- and dri--- alike. Many of these events were truly grueling tests. There were neither high--- to speak of at the time, nor spare parts to be had on the way if any--- went wrong.

Speed rac---, however, prov--- the real attrac--- for those early motor car fans. Spectators by the hundreds of thousands converg--- on New York's Long Island from every part of the country to watch the annual Road Rac---, the first proper--- organized automo--- races.

The Making of Champions

Four hun--- students, aged eleven to eig---, are enroll--- here. For six mon--- to a year and a half af--- a stu--- enters the sch---, depending on his physi--- development, he spends most of his time doing spe--- exercises and play--- certain gam--- that will tough--- him and increase his spe--- and abi--- to react quick---. Before he starts his wrestling train---, he has to be in good physi--- shape.

The full course of tra--- lasts up to sev--- years. The les--- are standardiz--- and given in an official syllabus. These les--- begin with the most elementary rul--- of the Greco-Roman style of wres--- and move on to the finest points of technique that an expert wres--- must know.

The Making of Champions

The boys attend the school from six to twelve h--- a w---, depend--- on the a--- group they are in. The old--- have the long--- and the most fre--- sessions. Every b--- who has star--- his train--- in wres--- must take part in competi---. At the a--- of four---, they be--- to tra--- to oth--- cities and republics for mat---. The stu--- have to pass examina--- in wres--- techniques. They receive grades. Those who fail and cannot do bet---, are drop--- and advis--- to take up ano--- sport for which they are physi--- better suited. This hap--- to few.

Is There Life After Graduation, Henry Birnbaum?

It's Wednesday morning. I wake up to the --- aroma of coffee -- like music. I throw on --- bathrobe and shuffle out to the kitchen. It --- 8:00 and my mother is fixing some scrambled --- and leafing through recipe books at the same ---. It is obvious that she has tomorrow's dinner --- her mind already. My brother is there sipping --- absentmindedly while reading a paper he has to --- at his seminar later this morning. Dad's still ---. We can tell because the small Japanese TV ---, glowing like a crystal ball on the table, --- slightly distorted with little lines running horizontally through --- picture. When Dad is through, the lines stop. --- "Today" Show is on. This is the news ---. (The other big one in the living room --- the football-game and entertainment TV.) Anyway, the national --- is being broadcast. I am looking over Jim's --- while I shake up the orange juice. I --- barely listening.

Selections from Human Behavior

Therapists are not immune from common misconceptions ----- the blind. The idea of --- visually handicapped as ------- helpless is wrong--most legally blind people ---- some degree of sight that allows ---- to be independent; and, in ----, they fill a wide variety of occupations. Therapists must also remember ---- blind persons have nothing in ------ except their blindness. Their loss of sight might have led to a ---- of self-acceptance, depression or anger, but the ------- that brings them through the therapist's door might also have nothing to do with their --------. Barron points out that while therapists seem reluctant to work with the ----- because they cannot achieve miraculous ends, the goal is to help the ----- adapt and realize their own potentials.

Last May, --- Maharishi Mahesh Yogi, founder of --- Transcendental Meditation --------, made the stunning announcement ---- his techniques --- help practitioners learn how to levitate into the ---. It was a daring statement to make. Even Newsweek picked -- the story when another TM spokesman, Robert Oates, further stated ---- several advanced students had already mastered this astounding ------- ability. So far, though, no TMer has pulled off the stunt in public.

A few potheads have ------ claimed that smoking the ---- cures everything from bunions -- the blahs. But a recent court ----- permitting Robert Randall, a glaucoma victim, to smoke --------- to save his -------- might tempt the rest of us to reconsider pot's curative powers.

"Did you ever notice ---- there aren't many Chinese ---- named Rusty?" That observation was made by George Carlin, a -------- with a talent for the thought-provoking comment, "I just thought of the perfect crime. You pick one guy up by the ankles and you kill another --- with him. They ---- die and there's no murder ------. The police will probably think it was a pedestrian accident."

APPENDIX G

PHASE II MATERIAL

(Cloze and original passages)

Project #710740

Send Your Frog to Camp

The annual frog-jump___ contest in Calif_____'s Calaveras County, which Mark Twain made famous, won't hap___ until next May; but contest____ are being warned by the world's only university for fro__ that now is the time to begin train___ those jump___ amphibians for the big event. This is the word from Doctor of Frog Psych_____ Bill Steed, who also happens to be the presid___ of Croaker College.

Croaker College, in Sacramento, offers a three-w___ special cram course for serious-minded jump___ frogs. For $50, each frog gets room and boa__, weight-lift___ train___, sauna bath_, bubble b____ and hypnotic treat_____ from Dr. Steed. Among the 250 jump___ alumni of Croaker College, Steed says, are several Calaveras win____.

Croaker College can be reached at (916) 489-2521.

Don't Be A Pal To Your Son

There are many different atti_____ on how to treat Ame_____ youth. One we heard recent__ comes from Al Capp, the cartoonist, who was once a boy him____. Mr. Capp, father of three, told us in what might be his la__ interview:

"When I was six years old my parents put me in a clean shi__, pointed out the dir_____ of school and told me not to come b___ for eight ye___. They never expected to see my tea_____ and the te_____ never ex_____ to see my p_____. Each one had a func____. My pa_____ were suppos__ to feed and clo___ me; my te_____ was suppos__ to te___ me how to read and wr___. Neither group had any effect on the o____. The only thing my p_____ knew a____ my t_____ was 'she was always pick___ on me.'

"My t_____ graded me on ari_____, Eng____, hi_____, and geo_____. Since I failed all of them, it was obvious I was go___ to be a car_____."

The Hobbit

In a hole in the grou__ there liv__ a hobbit. Not a nasty, dirty, wet ho__, filled with the ends of worms and an oozy smell, nor yet a dry, bare, sandy ho__ with noth___ in it to sit d___ on or to eat: it was a hob___-hole, and that means comfort.

It had a perfect__ round do__ like a porthole, painted gr___, with a shiny ye____ brass knob in the exact mid___. The door op____ on to a tube-shaped hall like a tun___: a very comfort____ tu____ without smoke, with panelled walls, and floors tiled and carp____, provided with polished chairs, and lots and l___ of pegs for hats and coa__ -- the hob___ was fond of visitors. The tun___ wound on and o_, going fair__ but not quite str_____ into the side of the hil_ -- The Hill, as all the people for many miles round called it -- and many little round do___ op____ out of it, first on one side and then on a_____. No going upst____ for the hob___: bedr____, bath_____, cellars, pantr___ (lots of these_, wardrobes (he had whole rooms devot__ to clot___), kitch___, dinnin_____, all were on the same fl___, and indeed on the same passage. The best ro___ were all on the left-h___ side (go___ in), for these were the only ones to have wind___, deep-set rou__ win____ look___ over his gard__, and meadows beyond, sloping do__ to the river.

The Handicapped: Hidden No Longer

Hillam is a gregari___ man with a tumble of dark hair and a seri
turn of mind. Since coll___, he has direct__ his feel____ in__ the movem___
to improve life for the handicap___. "You can see why we've crept out of the
attics and said, 'Hey, cut this out,'" he says. "We're not look___ for gift_.
We want the same th____ every___ else on earth has. We have been den___ our
civil right_. And we want them. A lot of chil____ are born or bec___ disabl__.
If we don't do some_____, those chil____ won't be able to get about, won't
have friends, won't have jobs, and will be brainwash__ into think___ they're
worthless monsters. So this movem___ isn't going to go away. Quite the contr___,
it's go___ to grow and g___ and g___."

The ha_____ -- the bl___, crip____, de__, menta___ reta____ -- have
mobilized into a civil righ__ move____ for the 1970's. They have organiz__ and
lobbied for what most Am_____ take for grant__: a drink of wa___ at a public
fou_____, access to bus__ or sub____, a way in and out of build____, the ri___
to at____ the scho__ of th___ ch____, and the fre____ to live independ___ lives
with dignity. The disabl__ constitute a unique minority, embrac___ every race
and reli____, both sexes and all ages. And, as ha_____ groups like to point
out, member____ can be conferred on anyone at any time -- by disease, by acci____,
by heart atta__ or str___. "Not anyone can become black or a woman," says one
movement leader. "But anyone can become ha_____. You could tomorrow."

True Section

Gaboo Miyan, a farm__ in India, was bitten by a rab__ dog. Miyan suffer__ no ill effects, but the dog promp___ died. Five months later, Miyan was bit___ by a krait snake, whose poison is consid____ five times deadlier t___ the cobra's. Again, Miyan was not affec___, and the next day the krait was found dead on the grou__ near where it had bit___ him. Miyan attributes his apparent immuni__ to rab___ and snakeb____ to his consump____ of large quanti____ of the kuchela herb, which contains strychnine.

Police in Janesville, Wis_____, caught Michael P. Carlson intimidating a corner__ rat at 3:00 a.m. on a downt___ st____. Carlson said the rat had bit___ him, but the offic___ claimed that they could see no rat bit__ on Carlson's body, and order__ him to leave the rat al___. Carlson then tried to throw his coat over the rodent, and was arres___.

From an editorial in the Columbus, Ohio, Citizen-Journal:

"It's bad enough that Col_____ has so many prostit____.....but -- pound for p____ -- we must have some of the heav____ and homel____ hook___ in the country."

Santa Gets Busted in Copenhagen

It is Copenhagen at Christmastime. You are shopp___ at one of the city's larg___ depart____ stores. Sudden__, by some pre-arranged signal, 35 men and wo___ dress__ as Santa Claus emerge from the washrooms and descend on the store's book depart____. There, they start tak___ books down from the sh_____ and giv___ them to customers. One of them warmly wishes you a merry Chr_____ and presses several volumes on you. Giv___ generously, he says, is what Chr_____ is all about: Here, take these. What is this? A promotion gimmick? But then an alarmed store mana___ comes in and beg___ shout___. Customers are laugh___, tak___ books with them. Suddenly masses of police arrive, and swiftly haul the generous Sa____ out in__ the stre__. There, the red-suit__ people are roug___ up, searc___ and thrown into paddy wa____. Watch___ bystanders are horri___. Child___ become hyster____.

Project #710740

Make Mine a Broccoli Steak

A generation ago, vegetarians in the United S_____ were a small and unfashion____ minori__. Today there are 10 mil____. Vegetarian restaur____, once curiosities, are now commonpl___ in most cit___, and there are vegetar___ societies in almo__ all parts of the count__. Their ranks inclu__ big nam__ like Cloris Leachman, Joanne Woodward, Paul Newman, Dick Gregory, and ex-Beatle George Harrison.

Vegetar____ fall into three main catego____: lacto-ovo-vegetar____, probab__ the most common, avoid all me__ and fish but they use dairy products such as mi__, chee__, and but___, along with eggs; total vegetar____ excl___ eggs, all chee___ (most che____ are coagulated with animal rennet, an enzyme taken from a calf's stomach at the time of slaughter. For this reason, many lacto-ovo-veget_____ eat only che___ made with vegetable rennet); vegans (pronounced VEE-gans) avoid all products that in any way use animals, such as leather goods, and commercial cosmet___ and soaps that contain anim__ fats.

Freezing to Death on the Equator

Twenty men froze to dea__ on the equator beneath a brilliant tropic__ African s__.

In February 1908, Baron Egon von Kirchstein led a caravan of forty men in an attempt to conquer one of the world's might____ volcanoes, the 14,500-foot-high Mount Karissimbi of the Virunga Range in Rwanda, Central Africa. The volcano straddles the equator.

They endured incred____ cold for several day_ before they reach__ the Branca Crater, 12,000 feet above sea level. Here the howling of an icy wind sudden__ increa___ to the fury of a temp___. It was high noon, but the cold grew intense in spi__ of a tropic__ sun blaz___ overhead. The wind and the mountainous terrain made the erec____ of tents imposs____. Wearing sunglas___ against the blinding glare, the members of the caravan huddled close togeth__ for warmth, for what seemed like an etern___.

The air grew more and more glacial until death began to still the chattering teeth of the suffer___. Around six o'cl___ in the aftern___ the arctic wind abated and the surviv___ began a grim stocktaking. Fully half of the carav__ lay dead on the icy grou__ still wear___ their spectacles against the setting sun. Twenty men died between twelve noon and six p.m. on Feb_____ 28, 1908, froz__ to death under a blaz___ tropi___ sun.

Jaws

The great fish moved silent__ through the night wa___, propel___ by short sweeps of its cresc___ tail. The mou__ was open just enough to permit a rush of wa___ over the gills. There was litt__ other motion: an occasio___ correct___ of the apparent__ aimless course by the slight rais___ or lower___ of a pectoral fin--as a bird chang__ direct___ by dipp___ one wing and lift___ the other. The eyes were sightl___ in the black, and the other senses transmit___ noth___ extraordin___ to the small, primit___ brain. The fish might has been asle__, save for the movem___ dicta___ by count____ millions of years of instinctive continuity: lacking the flota____ blad___ comm__ to other fish and the flutter___ flaps to push oxygen-bear___ water through its gills, it surviv__ only by moving. Once stopp__, it would sink to the bot___ and die of anoxia.

The land seem__ almost as dark as the w____, for there was no moon. All that separa___ sea from shore was a long, straight stretch of be___--so whi__ that it shone. From a house behi__ the grass-splotched dunes, lights cast yellow glim____ on the sand.

The front door to the hou__ open__, and a man and a wom__ stepp__ out on__ the wooden porch. They stood for a mom___ star___ at the sea, embrac__ quick__, and scamper__ down the few steps on__ the sand. The man was drunk, and he stumbl__ on the bott__ step. The woman laugh__ and took his hand, and toget___ they ran to the bea__.

Nolan Ryan: Strike-Out King

I lik__ the sound of it when I said it over slow__: Nolan Ryan Night. I knew that hav___ a night dedicat__ to you is a special kind of thrill few ball pl_____ ever get to have; it has certain__ been one of the most rewar____ experien___ in my career so far.

Everyo__ in Anaheim Sta____ that night was giv__ a ball-point p__ with my autog____ prin___ on it. The Angels' Booster Club gave me a tro___ at home plate before the game, and also some gifts that I apprecia___. But more import___ to me was what these hon___ meant. It's a very warm feel___ to know that peo___ think enough of you to dedic___ a night to you.

In two season_ of pitch___ for the Cali_____ Angels I had won 19 game_ and was mov___ towa__ winn___ 21 game_ in 1973. In my sec___ sea___ with them I pitch__ two no-hitters, which had been done only four tim__ before in base____ hist___. I was about to set a new rec___ of 383 bat____ struck out in a season. And I was a lead___ candidate for the Cy Young Award, which goes to the outstand___ pitch__ in the league each year. To me it was an even great__ event when I thought about the times I had been ready to give up. There had been lot_ of those tim__.

The Cruise of the Dead

On Sept____ 22, 1860, the whaling schooner Hope, under command of Captain Brighton, was operat___ in the Southern Ocean south of Drake Straits when the towering walls of an ice barrier parted abrupt__ and reveal__ one of the strang___ crafts ever se__ on the se__. It was crust__ with ice and sno_, the yards and rigging dismantl__ and fall__, the sails in icy shreds, and the weather-worn hull was terribly batter__ and encrus___ with ice.

It was a schooner which had just been releas__ from the grip of the ice king. Captain Brighton board__ the stran__ craft and was startl___ to find a trag__ stage setting with the players -- all perfect__ preser___ -- sit____ like froz__ statues in various natur__ attitudes. There was the corpse of the capt___ seat__ in a chair, leaning backw___, with a pen still in its hand and the open logb___ before it. A perusal of the log identi____ the ship as the Jenny and the last port of call as Lima, Peru. It reveal__ the fact that the Jenny was caught in the ice jam on Jan____ 17, 1823, and that the cruise of the dead has lasted thirty sev__ y____.

The last line on the op__ logb___ befo__ the hand of the dead cap____ was as follows:

"May 4, 1823.....no food for seven__-one da__. I am the only one ali__."

The dead bodies of sev__ of the Jenny's crew and the corpses of a wom__ and a dog were all that were found on board. Cap____ Brighton remov__ the log and upon his retu__ to Eng____ deposit__ it with the Brit___ Admiralty.

Ol' Diz Makes a Comeback

In the mid-1930's, Dizzy Dean was one of the great--- pitch--- base---- had ever seen. But by 1938, he was through. The St. Louis Cardinals, for whom he had had his biggest year, had trad-- him to the Chicago Cubs. The Cubs used him sparingly in 1938, just enough to help them win the pennant, but he was pitch--- with his hea-- and his head. His fast ball was gone.

Dean strugg--- through two more sea---- with the C---, then suf----- the humilia---- of being sent down to the mi--- lea----. The best he co--- do with Tulsa in the Texas Lea--- was to break even, win---- eight and los--- e----.

This was the final confirma----. Even De-- was forced to admit that he was through, and when the St. Lou-- Browns ask-- him to become their radio broad------ in 1941, Dean accep--- glad--. Talk--- had always been one of his strong poin--, but he usua--- talk-- about him----.

Talk--- about other- was the unnat---- part of baseb--- broadcast--- for D---, but in his unique way he learn-- to keep his listen--- entertai---. His grammar was so bad, however, that school teach--- complain-- about his broadcasts. They said that he was a bad influence on their stu-----. Although his use of the En----- lang---- never impro---, D--- did make hims--- valuable to the Browns, who were consistent-- the worst team in the Am------ Lea---.

$25,000 for a Drink of Water

This transaction took place under particular-- tragic circum-------. A camel caravan laden with a rich cargo of silk, spi---, ivory, and indigo was ambush-- by a band of Tuareg desert robb--- in the grim---- part of the Sahara between Sudan and Algeria. The section is known as the Erg, the Desert of Thirst and Death, where there are fine shifting san--, tall dun--, and a total absence of wa--- and vege------. The cargo and the cam--- were abducted by the robb--- and the memb--- of the caravan slain.

Only two escaped. They were the own--, a rich merchant named Hamed Ibn-el-Hatib, and a humble ca--- driv-- named Hakkiya. They had stepp-- out to recite their even--- prayers and escap-- the slaughter. It was well known to Hakkiya that Hamed wore a money belt contain--- 10,000 ten-franc gold pieces (about $25,000).

The attack had occurred in the month of Aug---, and under the fiercely broil--- sun the water gourds of the two wander--- were soon empty. There was only one mouth--- of wa--- left between them and that was in Hakkiya's g----. The feverish brain of the merchant conceiv-- a plan to slay Hakkiya for his w----, but the ca--- driv-- was on his guard and in bet--- physical cond-----.

It was the dri---'s turn to make a fantastic sugges----. "The life of one of us may be saved by a mouth--- of water," he told Ibn-el-Hatib. "If you survive I'll expect you to take care of my family. But," he added, "I'll not part with my wa--- for noth---. I'll swap it for the con----- of your mo--- b---."

"If I survive," thought the mer-----, "I'll easily re------ the gold from the dead dri---." He removed his b--- and wordlessly handed it to Hakkiya. But the latter shook his head.

"I want your scrip," he went on. He handed the merc---- a large lead pencil

and tore half of a manila sheet he had been scribbling on.

He dictated: "I trad-- the full conte--- of my mo--- b--- for the wa--- g---- of Hakkiya. Signed, Hamed Ibn-el-Hatib."

The w---- -- the most costly swallow on record -- changed hands. They resumed their plod---- way. Death overtook them when they were only one thou---- feet from the oasis of Azouatan. They were found several days later. The mo--- and scrip were turn-- over to Hakkiya's widow.

Present -- But Not Voting

Though dead for nearly a hun____ years, the dressed-up skeleton of Jereny Bentham, with his head between his feet, sits in uncanny sile___ at the head of the hospi___ board around which the trustees of the University College Hospital in London gather. Jeremy Bentham found__ this hos_____ in 1827 and presided at the first meet___ of the Board of Trustees -- and he still does to this day, al_____ he died in 1832. Each mee____ of the board has found his weird fig___ at the table. His gaunt form is erect, his sightless eyes stare out_____, and his broad-brim___ beaver hat is never remov__ from the long locks that dangle down on his shoulders, nor is his glov__ hand ever taken from the cane that it has rest__ upon for over one hun____ y____. And as the various impor____ bits of busi____ come before the bo___, old Jeremy is consulted -- and when no answ__ comes from his grinn___ teeth -- he is recorded as: "Present -- But Not Voting"

This dress__-up bag of bon__ and dust of what was Jeremy Bentham sits at this board because the liv___ Jeremy Bentham willed it so.

When Ben____ died he left his whole fort___ to the Uni_____ Coll___ Ho_____, but on the condition that his skel____ be preserved and placed in the Pres_____ chair at every board me_____. This unusual testament has been faithf____ obey__ by the generations of trust___ that have followed; and Jeremy still sits in the Pr_____ chair.

Jeremy Bentham was a child prodigy. He could speak Latin, Greek, Fren__ and Eng____ at the age of five. Matriculating at Queens Coll___, Oxford, when only thirt___, he won his B.A. two years later and set out upon an eventful career that was to bring him fame and fortune as a writ__, scient___, and philosop___.

His first work was entitled Fragments on Govern____, which was acclaimed as a masterly attack upon Blackstone's eulogies of the British govern____ system.

Fame follow__ fast and the young scholar was soon taken up by the intelligen____ of his day, and his works command__ attent___ not only in Engl___, but on the Continent and in Am_____.

Although he travel__ wide__ and led an event___ life, it seems that melancholy overtook him in the twilight of his life -- he was alone and without a family -- and it was then, evident__, that the thought of self-perpetua____ came upon him, and the idea of always be___ pre____ at the me_____ of the College that he fou____ took definite course in his will.

It was in accordance with this last weird flare of his genius that his testam___ demanded that his head be sever__ from his body in the presence of his friends and placed in a separate glass case which now rests betw___ his ankles, while a mask, a life-like replica of his liv___ face, be pla___ upon his should___ instead.

And so he has sat for nearly a hun____ years -- always pre____ -- but not vot___.

The Daring Escapade of 1916

Sixty-one years ago, on the Fourth of J___ in 1916, 22-year-old Adeline Van Buren and her 24-year-old sis___ Augusta mount__ their motorcycles, adjusted their gog____, and roared off in a cloud of du__ from the Sheepshead Bay racet____ in Brooklyn, New Y___.

Sixty days later, hav___ made headli___ all the way, they chug___ in__ San Franc____, complet___ the first transconti_____ motorcy___ trip ever made by what the newspa____ then still called the gentle sex.

The purpose of the trip, the Van Buren wom__ told the press, was to prove that wom__ could be count__ on to help in the National Preparedness effort, and that if the Uni___ Sta___ became involv__ in Wor__ W__ I, Uncle S__ would know that not only his neph___ but also his nie___ could serve as motor_____ scouts and dispatch riders.

The odyssey took them -- with side trips -- some 5,500 miles. On one side trip they zoom__ up the wind___, and in those days, treache____, summit road on Pike's Peak, a two-and-a half-mile cli__ that had never been driv__ before by any wo___ in any kind of motorized vehicle. Although there were no disas____, they did get lost in the desert about a hund___ miles west of Salt Lake, and their canteens ran dry. Luckily, a prospec___ happe___ by with a tank wagon and he poin___ them back to the trail. The roughest condi_____ of the sisters' trip were encount____ in the Colorado moun_____ during cloudbursts, on the deep sand and rock_ washout trai__ between Denver and Salt Lake City, and in the muddy ruts when the rains came as they cycled across Kansas and Nebraska. Augusta was so small that when she was "in the saddle" she could bare__ touch the gro___ with the tip of her t__. And sever__ times, Adeline said, they'd fall asl___ while rid___ in those ruts, and sim___ fall off their mach____. They were arrested a half-dozen times, too, in small towns between Chicago and the Rockies -- for wearing men's cloth___ -- but each time they were releas__

with only a reprimand, provided they got out of town fast.

None the worse for wear, and with frequent long stopove__ as guests of tire-and-motorc____ distribu____ along the way, they arriv__ bright and beaming on the West Coast on Septe____ 2, proclaiming "Woman can, if she will!"

And the bottom line of their trip? When the Uni___ Sta___ join__ the war a year later, Adeline volunteered for the Army and was rejec___, so she return__ to her job as an Engl___ teach__. Augusta became a correspondent in a business school, but took up fly___ next, continu___ that until she was well into her six____.

The Dog That Made A Box Score

A large Cuban baseball play__ named Roberto Gonzalo Ortiz appear__ in Charlotte, North Caro____, in 1941, to play base____ for the Char_____ Hornets in the Piedmont League. Ortiz lov__ to play bas_____ and the Wash_____ Senators, who owned his contract, thought he play__ very well. He came as a pitch__ who had burn___ speed, but little control. When he started to play for the Hornets, he was switch__ to the outfi___, where his strong arm would command respect of base run____.

Because Ortiz could barely speak Eng____, he found him____ alone in Char_____ except for one Cuban friend and a small dog, who was the color of cook__ squash. The Cuban boy was shy but ani____ loved him, especi_____ his homeless mongrel dog. When the team work__ out, the yellow dog romped along with Ortiz. When the te__ went in__ the clubh____, he seem__ to wait especi____ for Ortiz to come out. When the te__ play__, the yel___ dog seem__ to know that his place was out of the way.

Anoth__ thing the dog seemed to know was base____. The excit_____ in the stands created when the Char_____ team would work up a rally excit__ him, too. Often the groundskee___ would be forc__ to chase him out of the pa__.

One Sun___ aftern___, though, while the yel___ dog was enjoy___ the fr of the park, he complete__ forgot him____. Out of it he emerged as one of the most famous dogs in base____ lore.

The Char_____ team went to bat in the last of the nin__ in____ trail___ by one run, apparent__ the victim of a tough pitch__. But the pitch__ lost his control momentarily, and walk__ a Hornet bat___. The next bat___ was Roberto Ortiz.

The big Cuban got a pitch that he lik__ and lash__ in__ it. As he hit the ball, the crowd lea___ to its feet with a roar. This aroused the yel___ dog, who was sleep___ in the dirt under the first-base bleac____. The ball had gotten

by the center field__ and a run was scor__, ty___ the game. Ortiz would be try___ for every base he could get.

As the Cuban near__ first, he was join__ by a sudden blur. The yel___ dog, catch___ sight of his fri___, had burst thr____ the open clubh____ gate and was off to join him. Down to sec___ base they went, the big Cuban and the lit___ dog, run____ like a team. Then around se____ base, past the shorts___, whom the dog bar___ mis___ while ma____ his wide turn.

The throw was com___ in from the out_____ now and Ortiz was in danger as he ne____ third. The coach sign____ for him to slide and as Ortiz slid, the ye____ dog slid, too. The umpire's hands signaled safe. Both Ortiz and his dog had made it.

Project #710740

Your Tax Dollars at Work

The State Legislature of Maine has set aside the first day of winter as an annual holiday to honor Chester Greenwood, who invent__ earmuff_.

The Oregon State House of Repres_____ has act__ to make the Sasquatch, or "Bigfoot," a protect__ species.

The lower House of the Iowa State legislature has declar__ the state flower of Kansas, the sun_____, a noxious weed. Seven year_ ago, when similar legisla____ was propos__ in Iowa, Kansas introduc__ a bill to declare the state bird of Iowa, the goldfin__, a public nuisance. This year Kan___ has not yet been heard from.

Mass_____ has had to modify its state gun control laws so that persons convic___ of carry___ unregister__ BB guns will not get an automatic one-year jail sent____.

A bill to forbid the sale of candy contain___ liquor to minors has been introduc__ in the Calif_____ state assembly by Assemblywoman Leona Egeland (D-San Jose), who stated, during debate, that, "My seven-year-old with her 50 cents allowance could go down to the st___ and buy two Babarums, ride her bic____ in traf___, go to the playgr____, do other childish things, and not be in total con____."

The U.S. Law Enforcement Assistance Administration commission__ a prototype police patrol car of the future which contain_ $49,000 worth of electro___ equipm___, including a micro-compu___ whose readout tell_ the driv__, among other things, whether the siren is on.

The U.S. Forest Service is doi__ design research on a solar-power__ outhouse.

A recent Labor Depart____ Occupa_____ Safety and Health Administra____ farm safety pamphlet contain__ the follow___ two passages: "Hazards are one of the main causes of acciden__. A hazard is anyth___ that is danger___." And, "Be care___ that you do not fall i___ manure pits."

A Calif_____ county recent__ appli__ to the Commerce Depart____ for $1 million in public works funds to build a swim____ pool. The county had previous__ received $7 million in drought relief aid.

Send Your Frog to Camp

The annual frog-jumping contest in California's Calaveras County, which Mark Twain made famous, won't happen until next May; but contestants are being warned by the world's only university for frogs that now is the time to begin training those jumping amphibians for the big event. This is the word from Doctor of Frog Psychology Bill Steed, who also happens to be the president of Croaker College.

Croaker College, in Sacramento, offers a three-week special cram course for serious-minded jumping frogs. For $50, each frog gets room and board, weight-lifting training, sauna baths, bubble baths and hypnotic treatments from Dr. Steed. Among the 250 jumping alumni of Croaker College, Steed says, are several Calaveras winners.

Croaker College can be reached at (916) 489-2521.

Freezing to Death on the Equator

Twenty men froze to death on the equator beneath a brilliant tropical African sun.

In February 1908, Baron Egon von Kirchstein led a caraven of forty men in an attempt to conquer one of the world's mightiest volcanoes, the 14,500-foot-high Mount Karissimbi of the Virunga Range in Rwanda, Central Africa. The volcano straddles the equator.

They endured incredible cold for several days before they reached the Branca Crater, 12,000 feet above sea level. Here the howling of an icy wind suddenly increased to the fury of a tempest. It was high noon, but the cold grew intense in spite of a tropical sun blazing overhead. The wind and the mountainous terrain made the erection of tents impossible. Wearing sunglasses against the blinding glare, the members of the caravan huddled close together for warmth, for what seemed like an eternity.

The air grew more and more glacial until death began to still the chattering teeth of the sufferers. Around six o'clock in the afternoon the arctic wind abated and the survivors began a grim stocktaking. Fully half of the caravan lay dead on the icy ground still wearing their spectacles against the setting sun. Twenty men died between twelve noon and six p.m. on February 28, 1908, frozen to death under a blazing tropical sun.

Santa Gets Busted in Copenhagen

It is Copenhagen at Christmastime. You are shopping at one of the city's largest department stores. Suddenly, by some pre-arranged signal, 35 men and women dressed as Santa Claus emerge from the washrooms and descend on the store's book department. There, they start taking books down from the shelves and giving them to customers. One of them warmly wishes you a merry Christmas and presses several volumes on you. Giving generously, he says, is what Christmas is all about: Here, take these. What is this? A promotion gimmick? But then an alarmed store manager comes in and begins shouting. Customers are laughing, taking books with them. Suddenly masses of police arrive, and swiftly haul the generous Santas out into the street. There, the red-suited people are roughed up, searched and thrown into paddy wagons. Watching bystanders are horrified. Children become hysterical.

$25,000 for a Drink of Water

This transaction took place under particularly tragic circumstances. A camel caravan laden with a rich cargo of silk, spices, ivory, and indigo was ambushed by a band of Tuareg desert robbers in the grimmest part of the Sahara between Sudan and Algeria. The section is known as the Erg, the Desert of Thirst and Death, where there are fine shifting sands, tall dunes, and a total absence of water and vegetation. The cargo and the camels were abducted by the robbers and the members of the caravan slain.

Only two escaped. They were the owner, a rich merchant named Hamed Ibn-el-Hatib, and a humble camel driver named Hakkiya. They had stepped out to recite their evening prayers and escaped the slaughter. It was well known to Hakkiya that Hamed wore a money belt containing 10,000 ten-franc gold pieces (about $25,000).

The attack had occurred in the month of August, and under the fiercely broiling sun the water gourds of the two wanderers were soon empty. There was only one mouthful of water left between them and that was in Hakkiya's gourd. The feverish brain of the merchant conceived a plan to slay Hakkiya for his water, but the camel driver was on his guard and in better physical condition.

It was the driver's turn to make a fantastic suggestion. "The life of one of us may be saved by a mouthful of water," he told Ibn-el-Hatib. "If you survive I'll expect you to take care of my family. But," he added, "I'll not part with my water for nothing. I'll swap it for the contents of your money belt."

"If I survive," thought the merchant, "I'll easily retrieve the gold from the dead driver." He removed his belt and wordlessly handed it to Hakkiya. But the latter shook his head.

"I want your scrip," he went on. He handed the merchant a large lead pencil

and tore half of a manila sheet he had been scribbling on.

He dictated: "I traded the full contents of my money belt for the water gourd of Hakkiya. Signed, Hamed Ibn-el-Hatib."

The water -- the most costly swallow on record -- changed hands. They resumed their plodding way. Death overtook them when they were only one thousand feet from the oasis of Azouatan. They were found several days later. The money and scrip were turned over to Hakkiya's widow.

The Hobbit

In a hole in the ground there lived a hobbit. Not a nasty, dirty, wet hole, filled with the ends of worms and an oozy smell, nor yet a dry, bare, sandy hole with nothing in it to sit down on or to eat: it was a hobbit-hole, and that means comfort.

It had a perfectly round door like a porthole, painted green, with a shiny yellow brass knob in the exact middle. The door opened on to a tube-shaped hall like a tunnel: a very comfortable tunnel without smoke, with panelled walls, and floors tiled and carpeted, provided with polished chairs, and lots and lots of pegs for hats and coats -- the hobbit was fond of visitors. The tunnel wound on and on, going fairly but not quite straight into the side of the hill -- The Hill, as all the people for many miles round called it -- and many little round doors opened out of it, first on one side and then on another. No going upstairs for the hobbit: bedrooms, bathrooms, cellars, pantries (lots of these), wardrobes (he had whole rooms devoted to clothes), kitchens, dinningrooms, all were on the same floor, and indeed on the same passage. The best rooms were all on the left-hand side (going in), for these were the only ones to have windows, deep-set round windows looking over his garden, and meadows beyond, sloping down to the river.

The Handicapped: Hidden No Longer

Hillam is a gregarious man with a tumble of dark hair and a serious turn of mind. Since college, he has directed his feelings into the movement to improve life for the handicapped. "You can see why we've crept out of the attics and said, 'Hey, cut this out,'" he says. "We're not looking for gifts. We want the same things everyone else on earth has. We have been denied our civil rights. And we want them. A lot of children are born or become disabled. If we don't do something, those children won't be able to get about, won't have friends, won't have jobs, and will be brainwashed into thinking they're worthless monsters. So this movement isn't going to go away. Quite the contrary, it's going to grow and grow and grow."

The handicapped--the blind, crippled, deaf, mentally retarded--have mobilized into a civil rights movement for the 1970's. They have organized and lobbied for what most Americans take for granted: a drink of water at a public fountain, access to buses or subways, a way in and out of buildings, the right to attend the schools of their choice, and the freedom to live independent lives with dignity. The disabled constitute a unique minority, embracing every race and religion, both sexes and all ages. And, as handicapped groups like to point out, membership can be conferred on anyone at any time--by disease, by accident, by heart attack or stroke. "Not anyone can become black or a woman," says one movement leader. "But anyone can become handicapped. You could tomorrow."

The Cruise of the Dead

On September 22, 1860, the whaling schooner Hope, under command of Captain Brighton, was operating in the Southern Ocean south of Drake Straits when the towering walls of an ice barrier parted abruptly and revealed one of the strangest crafts ever seen on the seas. It was crusted with ice and snow, the yards and rigging dismantled and fallen, the sails in icy shreds, and the weather-worn hull was terribly battered and encrusted with ice.

It was a schooner which had just been released from the grip of the ice king. Captain Brighton boarded the strange craft and was startled to find a tragic stage setting with the players -- all perfectly preserved -- sitting like frozen statues in various natural attitudes. There was the corpse of the captain seated in a chair, leaning backward, with a pen still in its hand and the open logbook before it. A perusal of the log identified the ship as the Jenny and the last port of call as Lima, Peru. It revealed the fact that the Jenny was caught in the ice jam on January 17, 1823, and that the cruise of the dead had lasted thirty seven years.

The last line on the open logbook before the hand of the dead captain was as follows:

"May 4, 1823.....no food for seventy-one days. I am the only one alive."

The dead bodies of seven of the Jenny's crew and the corpses of a woman and a dog were all that were found on board. Captain Brighton removed the log and upon his return to England deposited it with the British Admiralty.

Make Mine a Broccoli Steak

A generation ago, vegetarians in the United States were a small and unfashionable minority. Today there are 10 million. Vegetarian restaurants, once curiosities, are now commonplace in most cities, and there are vegetarian societies in almost all parts of the country. Their ranks include big names like Cloris Leachman, Joanne Woodward, Paul Newman, Dick Gregory, and ex-Beatle George Harrison.

Vegetarians fall into three main categories: lacto-ovo-vegetarians, probably the most common, avoid all meat and fish but they use dairy products such as milk, cheese, and butter, along with eggs; total vegetarians exclude eggs, all cheeses (most cheeses are coagulated with animal rennet, an enzyme taken from a calf's stomach at the time of slaughter. For this reason, many lacto-ovo-vegetarians eat only cheese made with vegetable rennet); vegans (pronounced VEE-gans) avoid all products that in any way use animals, such as leather goods, and commercial cosmetics and soaps that contain animal fats.

The Daring Escapade of 1916

Sixty-one years ago, on the Fourth of July in 1916, 22-year-old Adeline Van Buren and her 24-year-old sister Augusta mounted their motorcycles, adjusted their goggles, and roared off in a cloud of dust from the Sheepshead Bay racetrack in Brooklyn, New York.

Sixty days later, having made headlines all the way, they chugged into San Francisco, completing the first transcontinental motorcycle trip ever made by what the newspapers then still called the gentle sex.

The purpose of the trip, the Van Buren women told the press, was to prove that women could be counted on to help in the National Preparedness effort, and that if the United States became involved in World War I, Uncle Sam would know that not only his nephews but also his nieces could serve as motorcycle scouts and dispatch riders.

The odyssey took them -- with side trips -- some 5,500 miles. On one side trip they zoomed up the winding, and in those days, treacherous, summit road on Pike's Peak, a two-and-a half-mile climb that had never been driven before by any woman in any kind of motorized vehicle. Although there were no disasters, they did get lost in the desert about a hundred miles west of Salt Lake, and their canteens ran dry. Luckily, a prospector happened by with a tank wagon and he pointed them back to the trail. The roughest conditions of the sisters' trip were encountered in the Colorado mountains during cloudbursts, on the deep sand and rocky washout trails between Denver and Salt Lake City, and in the muddy ruts when the rains came as they cycled across Kansas and Nebraska. Augusta was so small that when she was "in the saddle" she could barely touch the ground with the tip of her toe. And several times, Adeline said, they'd fall asleep while riding in those ruts, and simply fall off their machines. They were arrested a half-dozen times, too, in small towns between Chicago and the Rockies -- for wearing men's clothes -- but each time they were released

with only a reprimand, provided they got out of town fast.

None the worse for wear, and with frequent long stopovers as guests of tire-and-motorcycle distributors along the way, they arrived bright and beaming on the West Coast on September 2, proclaiming "Woman can, if she will!"

And the bottom line of their trip? When the United States joined the war a year later, Adeline volunteered for the Army and was rejected, so she returned to her job as an English teacher. Augusta became a correspondent in a business school, but took up flying next, continuing that until she was well into her sixties.

Ol' Diz Makes a Comeback

In the mid-1930s, Dizzy Dean was one of the greatest pitchers baseball had ever seen. But by 1938, he was through. The St. Louis Cardinals, for whom he had had his biggest years, had traded him to the Chicago Cubs. The Cubs used him sparingly in 1938, just enough to help them win the pennant, but he was pitching with his heart and his head. His fast ball was gone.

Dean struggled through two more seasons with the Cubs, then suffered the humiliation of being sent down to the minor leagues. The best he could do with Tulsa in the Texas League was to break even, winning eight and losing eight.

This was the final confirmation. Even Dean was forced to admit that he was through, and when the St. Louis Browns asked him to become their radio broadcaster in 1941, Dean accepted gladly. Talking had always been one of his strong points, but he usually talked about himself.

Talking about others was the unnatural part of baseball broadcasting for Dean, but in his unique way he learned to keep his listeners entertained. His grammar was so bad, however, that school teachers complained about his broadcasts. They said that he was a bad influence on their students. Although his use of the English language never improved, Dean did make himself valuable to the Browns, who were consistently the worst team in the American League.

The Dog That Made A Box Score

A large Cuban baseball player named Roberto Gonzalo Ortiz appeared in Charlotte, North Carolina, in 1941, to play baseball for the Charlotte Hornets in the Piedmont League. Ortiz loved to play baseball and the Washington Senators, who owned his contract, thought he played very well. He came as a pitcher who had burning speed, but little control. When he started to play for the Hornets, he was switched to the outfield, where his strong arm would command respect of base runners.

Because Ortiz could barely speak English, he found himself alone in Charlotte except for one Cuban friend and a small dog, who was the color of cooked squash. The Cuban boy was shy but animals loved him, especially his homeless mongrel dog. When the team worked out, the yellow dog romped along with Ortiz. When the team went into the clubhouse, he seemed to wait especially for Ortiz to come out. When the team played, the yellow dog seemed to know that his place was out of the way.

Another thing the dog seemed to know was baseball. The excitement in the stands created when the Charlotte team would work up a rally excited him, too. Often the groundskeeper would be forced to chase him out of the park.

One Sunday afternoon, though, while the yellow dog was enjoying the freedom of the park, he completely forgot himself. Out of it he emerged as one of the most famous dogs in baseball lore.

The Charlotte team went to bat in the last of the ninth inning trailing by one run, apparently the victim of a tough pitcher. But the pitcher lost his control momentarily, and walked a Hornet batter. The next batter was Roberto Ortiz.

The big Cuban got a pitch that he liked and lashed into it. As he hit the ball, the crowd leaped to its feet with a roar. This aroused the yellow dog, who was sleeping in the dirt under the first-base bleachers. The ball had gotten

by the center fielder and a run was scoring, tying the game. Ortiz would be trying for every base he could get.

As the Cuban neared first, he was joined by a sudden blur. The yellow dog, catching sight of his friend, had burst through the open clubhouse gate and was off to join him. Down to second base they went, the big Cuban and the little dog, running like a team. Then around second base, past the shortstop, whom the dog barely missed while making his wide turn.

The throw was coming in from the outfield now and Ortiz was in danger as he neared third. The coach signaled for him to slide and as Ortiz slid, the yellow dog slid, too. The umpire's hands signaled safe. Both Ortiz and his dog had made it.

Present -- But Not Voting

Though dead for nearly a hundred years, the dressed-up skeleton of Jeremy Bentham, with his head between his feet, sits in uncanny silence at the head of the hospital board around which the trustees of the University College Hospital in London gather. Jeremy Bentham founded this hospital in 1827 and presided at the first meetings of the Board of Trustees -- and he still does to this day, although he died in 1832. Each meeting of the board has found his weird figure at the table. His guant form is erect, his sightless eyes stare outright, and his broad-brimmed beaver hat is never removed from the long locks that dangle down on his shoulders, nor is his gloved hand ever taken from the cane that it has rested upon for over one hundred [illegible]. And as the various important bits of business come before the board, old Jeremy is consulted -- and when no answer comes from his grinning teeth -- he is recorded as:

"Present -- But Not Voting"

This dressed-up bag of bones and dust of what was Jeremy Bentham sits at this board because the living Jeremy Bentham willed it so.

When Bentham died he left his whole fortune to the University College Hospital, but on the condition that his skeleton be preserved and placed in the President's chair at every board meeting. This unusual testament has been faithfully obeyed by the generations of trustees that have followed; and Jeremy still sits in the President's chair.

Jeremy Bentham was a child prodigy. He could speak Latin, Greek, French and English at the age of five. Matriculating at Queens College, Oxford, when only thirteen, he won his B.A. two years later and set out upon an eventful career that was to bring him fame and fortune as a writer, scientist, and philosopher.

His first work was entitled Fragments on Government, which was acclaimed as a masterly attack upon Blackstone's eulogies of the British governmental system.

Fame followed fast and the young scholar was soon taken up by the intelligentsia of his day, and his works commanded attention not only in England, but on the Continent and in America.

Although he traveled widely and led an eventful life, it seems that melancholy overtook him in the twilight of his life -- he was alone and without a family -- and it was then, evidently, that the thought of self-perpetuation came upon him, and the idea of always being present at the meetings of the College that he founded took definite course in his will.

It was in accordance with this last weird flare of his genius that his testament demanded that his head be severed from his body in the presence of his friends and placed in a separate glass case which now rests between his ankles, while a mask, a life-like replica of his living face, be placed upon his shoulders instead.

And so he has sat for nearly a hundred years -- always present -- but not voting.

Nolan Ryan: Strike-Out King

I liked the sound of it when I said it over slowly: Nolan Ryan Night. I knew that having a night dedicated to you is a special kind of thrill few ballplayers ever get to have; it has certainly been one of the most rewarding experiences in my career so far.

Everyone in Anaheim Stadium that night was given a ball-point pen with my autograph printed on it. The Angels' Booster Club gave me a trophy at home plate before the game, and also some gifts that I appreciated. But more important to me was what these honors meant. It's a very warm feeling to know that people think enough of you to dedicate a night to you.

In two seasons of pitching for the California Angels I had won 19 games and was moving toward winning 21 games in 1973. In my second season with them I pitched two no-hitters, which had been done only four times before in baseball history. I was about to set a new record of 383 batters struck out in a season. And I was a leading candidate for the Cy Young Award, which goes to the outstanding pitcher in the league each year. To me it was an even greater event when I thought about the times I had been ready to give up. There had been lots of those times.

Your Tax-Dollars at Work

The State Legislature of Maine has set aside the first day of winter as an annual holiday to honor Chester Greenwood, who invented earmuffs.

The Oregon State House of Representatives has acted to make the Sasquatch, or "Bigfoot," a protected species.

The lower House of the Iowa State legislature has declared the state flower of Kansas, the sunflower, a noxious weed. Seven years ago, when similar legislation was proposed in Iowa, Kansas introduced a bill to declare the state bird of Iowa, the goldfinch, a public nuisance. This year Kansas has not yet been heard from.

Massachusetts has had to modify its state gun control laws so that persons convicted of carrying unregistered BB guns will not get an automatic one-year jail sentence.

A bill to forbid the sale of candy containing liquor to minors has been introduced in the California state assembly by Assemblywoman Leona Egeland (D-San Jose), who stated, during debate, that, "My seven-year-old with her 50 cents allowance could go down to the store and buy two Babarums, ride her bicycle in traffic, go to the playground, do other childish things, and not be in total control."

The U.S. Law Enforcement Assistance Administration commissioned a prototype police patrol car of the future which contains $49,000 worth of electronic equipment, including a micro-computer whose readout tells the driver, among other things, whether the siren is on.

The U.S. Forest Service is doing design research on a solar-powered outhouse.

A recent Labor Department Occupational Safety and Health Administration farm safety pamphlet contained the following two passages: "Hazards are one of the main causes of accidents. A hazard is anything that is dangerous." And, "Be careful that you do not fall into the manure pits."

A California county recently applied to the Commerce Department for $1 million in public works funds to build a swimming pool. The county had previously received $7 million in drought relief aid.

APPENDIX H

SAMPLE PASSAGES FROM PHASE III

(A Friend Within the Gates)

Friend Within The Gates

She paused on the edge of the pavement before crossing the road to the hospital and looked up at the rows of windows, set in soot-blackened brick, which frowned down upon her. Unlike the Fountain, this, she could see, was no hastily erected emergency hospital of temporary buildings. Four-square and solid, the London loomed over the bustling highway which cut through the heart of Whitechapel as if it had grown out of the sooty cobblestones themselves until, a vast, immovable rock, it towered above the swarming tenements and narrow alleys of East London.

All about her, costers bawled their wares behind the barrows lining the roadway. Shawled and shabby women, clutching tattered shopping bags, haggled over prices and counted out their ha'pennies with jealous care. After the peace and quiet of Norfolk, the dignified luxury and gaiety of Brussels and the bright modernity of the Fountain, Whitechapel seemed like another, a nightmarish world into which she had strayed by accident.

Strange smells assailed her nostrils. Wraithlike figures brushed against her, whining plaintively and stretching out dirty, clawlike hands for alms. In a nearby doorway two children crouched -- one as still and pale as death itself, the other listlessly picking at the sores which covered its face.

Her heart contracted with pity. At the Fountain, and even in Swardeston, she had often been hurt and stirred to the depths of her being by the results of poverty and ignorance; but she had seen nothing quite like this. Here, all about her -- in the heart of one of the greatest capital cities in the world -- were hurt, helpless and unhappy people crying out for her help.

Friend Within The Gates

The hospital itself was modern for its time. It stood on a hillside overlooking the slum area it served, but apart from it. The buildings were surrounded by gardens, which in their turn were bounded by a private park where the nurses were at liberty to wander during their off-duty time. Edith's room was small, and high up beneath the eaves overlooking the park. From its tall windows she could see trees and grass, and above the clatter of the hospital, hear birdsong on a summer's morning when her turn of duty was over. Sitting there with the breeze cool on her forehead after a night in the stuffy wards it was almost possible, for the first time since she had arrived in London, to believe that she was back in the country again, though she had only to open her door to see through the corridor windows the thick pall of smoke which lay over the huddle of roofs and chimneys, and to be reminded that Norfolk was very far away indeed.

For it was from under that huddle of chimneys and roofs that her new patients came: people just as poverty-stricken and pathetic as those she had left behind in Whitechapel. It wrung her heart, sometimes, to send a patient, still white-faced and shaky, back to the sunless streets and damp, depressing hovel which was the only place he knew as "home"; or to turn out a fever-weakened child from his hospital bed when she knew his only refuge was a tenement room, already overcrowded and filthy.

Remembering her visits to the typhoid-stricken homes of Maidstone, the gratitude of the bewildered townsfolk for the gifts of bread and secondhand clothes and help in nursing their families, she began tentatively, to make little sorties beyond the hospital walls, following her patients back into the places where disease had its roots.

In someone less used to the consequences of poverty, and less accustomed to visiting the needy in their homes, it would have been a courageous

and harrowing decision to make, but Edith was far past the need for courage in taking such a step. It was a job she felt needed doing, and she did it without fuss.

Friend Within The Gates

On August 21st many more troops came through; from our road we could see the long procession, and when the halt was called at mid-day and carts came up with supplies, some were too weary to eat, and slept on the pavement of the street. We were divided between pity for these poor fellows, far from their country and their people, suffering the weariness and fatigue of an arduous campaign, and hate of a cruel and vindictive foe bringing ruin and desolation on hundreds of happy homes and to a prosperous and peaceful land. Some of the Belgians spoke to the invaders in German, and found they were very vague as to their whereabouts, and imagined they were already in Paris; they were surprised to be speaking to Belgians and could not understand what quarrel they had with them. I saw several of the men pick up little children and give them chocolate or seat them on their horses, and some had tears in their eyes at the recollection of the little ones at home.

From that day till now, we have been cut off from the world outside -- newspapers were first censored, then suppressed, and are now printed under German auspices; all coming from abroad were for a time forbidden, and now none are allowed from England. The telephone service was taken over by the enemy, and we were shortly deprived of its use. The post, too, was stopped, and, though now resumed to certain towns and countries, all letters must be left open and contain no news of war, or of anything of importance. The few trains that run for passengers are in German hands, and wherever you go you must have, and pay for, a passport. No bicycles are allowed, and practically no motors, so that once busy and bustling streets are very quiet and silent. So are the people, who were so gay and communicative in the summer. No-one speaks to his neighbour in the tram, for he may be a spy. Besides, what news is there to tell, and who has the heart to gossip, and what fashions are there to speak of, and who ever goes to a concert or a theatre nowadays, and who would care to tell of their all-absorbing anxiety as to how to make both ends meet and spin out the last of the savings or to keep the little mouths at home filled, with the stranger close by?

I am but a looker-on, after all, for it is not my country whose soil is desecrated and whose sacred places are laid waste. I can only feel the deep and tender pity of a friend within the gates, and observe with sympathy and admiration the high courage and self-control of a people enduring a long and terrible agony. They have grown thin and silent with the fearful strain. They walk about the city shoulder to shoulder with the foe and never see them, or make a sign; only they leave the cafes which they frequent, and turn their backs to them, and live a long way off, and apart . . .

Friend Within The Gates

One of the few pleasures at this time was to play simple practical jokes on the invaders, and the people of Brussels became adept in tormenting their tormentors. Whole streets of householders would enter into a conspiracy to set their alarm clocks for a certain time in the evening, when dusk was falling. The streets would empty, and the patrolling guards -- alerted by the unaccustomed stillness -- would gather on the corners, rifles at the ready for an ambush. The sudden, wild clamor of bells sent them scattering, stumbling, calling contradictory orders until, as abruptly as they had started, the ringing bells were silenced, leaving the soldiers open-mouthed and foolish in the street, still empty but whose every window showed a mocking face.

A variant on this trick was to tie a heavy saucepan on the end of a cord and lower it with a crash onto the pavement behind a passing patrol, whipping it in through the window a split second before he turned and caught the culprit.

Punishment by curfew invariably followed, but to the inhabitants of Brussels such punishments were marked up as triumphs, for they were an unmistakable sign that the enemy's nerves were shaken, and every pinprick was a tiny wound in his armor.

But pinpricks were not enough. A more positive resistance was needed, and the opportunity for it came very soon.

Friend Within The Gates

The eighteen thousand beds prepared in Brussels for wounded soldiers were never needed. So quickly did the tide of war engulf Belgium that the battle front was many miles to the southwest of the city before the dazed people of the capital had time to grasp the magnitude of the disaster which had struck them. But the work of the hospitals went on. Babies were still born, people fell sick; and even in the quiet streets, accidents still happened. The new school which was to replace the four houses in the rue de la Culture continued, slowly, to take shape. The clinic itself, the hospital of St. Gilles, and all the other hospitals over which Edith Cavell kept a watchful eye settled down to carry on with the work they had always done.

In some ways it was more difficult. There were shortages, and restrictions, and many things were "Verboten." But in other ways things became easier. War had convinced the women of Belgium, at last, that there was nothing dishonorable in hard work. Patriotism persuaded them, as Edith Cavell had been trying to do for so many years, that an aching back and roughened fingertips were things they could be proud of. They found, too, that work helped to keep at bay the nagging anxieties about husbands and sons; helped the dark days to go more quickly and gave them the sense of taking part, with their absent menfolk, in the struggle for freedom.

And yet, paradoxically, the work they did formed an oasis of neutrality in their war-torn world. In the wards and corridors of the hospitals and clinics of Brussels there were no "enemies"; only the sick and sorry who needed kindliness and help. Edith Cavell made sure that they received it. To her, a German soldier with a bullet wound was just as much in need of gentle nursing as a Belgian, or a French soldier, or a frightened refugee from a devastated village; just as much caught up in the great machine of war, and as hurt and puzzled by it. It was, she believed, her sacred duty to preserve life -- any life, which was placed in her hands. Only God had the right to take that life away.

Friend Within The Gates

The fortresslike prison of St. Gilles stood on the outskirts of Brussels. No city sounds penetrated its high walls, and once the vast, heavy door had clanged to behind the prisoners they were as cut off from their former world as if they had been spirited away to another planet.

In her tiny cell, late on the night of her arrest, Edith Cavell was alone, physically as well as spirtually, for the first time for many years. No one would come tapping on her door with a question, a responsibility to be shifted onto stronger shoulders, a problem to be solved. There had been, and would be, many questions of a different kind, but for the moment at least no one would turn to her for help. It was strangely restful, after so many years of ceaseless activity. She felt almost happy.

A faint gleam of moonlight crept through the high window to lay a cold finger on the spartan furnishings: a folding bed, a wooden stool, a tiny corner cupboard and a pitcher of water. If she turned her head a little she could see the spyhole in the door where every now and again the beam of a torch flashed as the jailers did their rounds.

The bleakness of her surroundings caused her no distress. For choice she had always lived simply and now she was almost unaware of the starkness of the room in which she lay. She was only aware that for once she had time to think: of what she had done, of what had happened to her, of what was to come. She searched her conscience, and found it clear. If she were to live this year over again, she would do exactly the same again. That she might have been instrumental in saving lives she was grateful. If it meant the sacrifice of her own liberty, she had no regrets. She held fast to her beliefs, and they gave her strength and inner peace. When at last she slept, the lines smoothed out from her face and there was, for a few hours, a look about her of the young Edith who had laughed and played in the fields and lanes of Swardeston, forty years before.